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Automotive Testing Labs, Inc, Aurora, CO

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Environmental Protection Agency, Ann Arbor, MI Emission Control Technology Div

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EVALUATION OF RESTORATIVE MAINTENANCE ON 1977 LIGHT-DUTY VEHICLES IN DENVER, COLORADO

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ABSTRACT

Emission and fuel economy tests were performed on a sample of forty-two individually-owned 1977 model-year light-duty vehicles in the Denver metropolitan area. Vehicles manufactured by Chrysler Corporation, Ford Motor Company, and General Motors Corporation were represented somewhat equally. The purpose of these tests was to investigate emission and fuel economy performance of typical in-use passenger cars and to quantify the individual and combined effects of any observable defects, disablement and/or maladjustments on exhaust emissions and fuel economy.

The investigation followed a test plan in which pairs of vehicles were separated into two groups. All vehicles were tested in the as-received condition, after which the first group of vehicles followed a test plan consisting of a Restorative Maintenance Evaluation. The second group of vehicles underwent an inspection of engine adjustments and emission control components and was then returned to the owner. Up to two additional tests were conducted on the first group of vehicles, each of which was preceded by a restorative maintenance action.

Each test point consisted of the 1975 Federal Test Procedure (excluding fuel evaporative loss segments), the Highway Fuel Economy Test and five short cycle tests. A modest driveability evaluation was also included.

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1. INTRODUCTION

The United States Environmental Protection Agency (EPA) is charged by the Clean Air Act with responsibility for the control and prevention of air pollution. In carrying out this responsibility, EPA develops, implements and administers a national program to characterize, quantify and reduce air pollution from mobile sources. The Emission Control Technology Division of the EPA is responsible for the conduct of surveys to obtain emission data from in-use vehicles and studies to develop and evaluate emission control alternatives. The survey data are used by the EPA in calculating emission factors and in projecting nationwide and metropolitan area mobile source emissions. These data are also used in developing transportation control procedures and contingency programs to cover emergency situations. Outside the EPA, the emission factors and emission control alternative data are used by state and local agencies in their transportation and air pollution control programs. In carrying out these responsibilities, the EPA's Emission Control Technology Division conducts in-use vehicle emission factors survey programs and emission control alternative studies on a regular basis.

With the introduction of 1977 model year vehicles, Federal Regulations required that light duty vehicles meet exhaust emission standards at the point of sale. Accordingly, the EPA conducted confirmatory emission certification tests in the Denver area at a contractor's facility, thus insuring compliance with the new regulations. Subsequent to the certification and actual sale of 1977 models at altitude, interest developed as to the effectiveness of emission control on these vehicles. As a result, the

EPA initiated a Restorative Maintenance Evaluation program, the subject of this report.

The Restorative Maintenance Evaluation Project was conducted under the direction of the Emission Control Technology Division of the EPA. The Project involved evaluations of the 1977 model-year vehicles from the Denver metropolitan area, Automotive Testing Laboratories, Inc., which operates a permanent facility in the area and was conducting the confirmatory emission certification test, was selected to perform the work. This report describes the design and conduct of the project and presents the test results.

2. TECHNICAL DISCUSSION

2.1 PROGRAM OBJECTIVES

The EPA's Emission Factor (EF) programs are designed to develop in-use vehicle emission data from which nationwide and metropolitan area emission factors are calculated. Vehicles surveyed under these programs are tested in the as-received condition. This approach, while permitting an assessment of in-use vehicles for emission factor determinations, does not provide specific information on the causes of poor emission performance. The Restorative Maintenance Evaluation Project was initiated to augment the in-use data in this regard. More specifically, its objective was to investigate and quantify the individual and combined effects of any observable defects, disablement and/or maladjustments on exhaust emissions and fuel economy.

2.2 PROGRAM DESIGN

The program was designed to utilize a sample of forty-two 1977 model-year vehicles operating in the Denver area. Chrysler, Ford and General Motors, the major domestic automobile manufacturers, were represented equally. Sales-weighting techniques were used to specify the vehicle engines and models evaluated.

The sample was comprised of vehicles procured from the general public. Each vehicle was no more than five months old with an accumulation of fewer than 4,000 miles. A random sampling technique was employed to gain access to vehicles conforming to these and specific model, engine and other identification criteria. Subsequent to the utilization of this technique, further screening of the candidate vehicles was employed.

The screening entailed a structured interview of each vehicle owner to identify a vehicle which had been subjected to unusual operating conditions or extensively modified from its original configuration. At this point the vehicle manufacturer became involved in the screening process. This initial involvement involved a search of warranty records on the vehicle in question. A vehicle judged atypical in any manner was precluded from the sample. A suitable vehicle meeting the criteria and passing the screening, however, was ultimately provided.

Once accepted into the program, the vehicle was evaluated in accordance with one of two test plans. The forty-two vehicles of the program were procured as twenty-one pairs; one of each pair designated to undergo test plan A, the other to undergo test plan B.

Test plan A was designed to bring a non-conforming vehicle, inasmuch as practicable, into compliance with the Federal Exhaust Emission Standards. Segments of the Restorative Maintenance plan include an initial test and one or more additional test sequences. Each test sequence is separated from the following by a decision point and an appropriate action. Each of the twenty-one group A vehicles was subjected to the initial test. The need for further testing was dictated by evidence of individual vehicle maladjustment, disablement, or non-conformance to the emission standards.

The twenty-one vehicles of plan B were subjected only to the initial test. Evidence of maladjustment and disablement was documented but not corrected.

Individual test sequences in each of the two plans consisted of a 1975 Federal Test Procedure (FTP), a Highway Fuel Economy Test (HFET)

and five short cycle tests. This FTP was modified to exclude evaporative emission measurement and the extensive preconditioning procedures of the full FTP. The short cycles are tests which are currently being employed or under consideration for Inspection/Maintenance (I/M) programs by certain State and Local agencies. A modest vehicle driveability evaluation was also included as part of each test sequence.

Other program design criteria included procedures to establish and verify accuracy of the emission measurements, and for the documentation and reporting of test data and vehicle identification, diagnostic and repair information.

2.3 TEST VEHICLE PROCUREMENT

2.3.1 Test Vehicle Procurement Plan

Restorative Maintenance Evaluation (RME) task vehicles were procured from the general public. 1977 model-year Chrysler, Ford, and General Motors passenger cars meeting the EPA-provided vehicle procurement criteria were sought. These criteria included provisions that the vehicles had been in-use no more than five months prior to the scheduled evaluation and that fewer than 4,000 miles had been accumulated since the initial sale. Other procurement criteria were provided on a listing which identified the desired vehicles by make, model (subcompact, compact, intermediate, etc.) engine size, transmission type (automatic, manual) and carburetor type (1, 2, 4 bbl and fuel injection). Vehicles comprising the listing were selected by the EPA on the basis of Colorado registration data using sales-weighted techniques. It was also specified that any necessary substitutions were identical in both A and B group vehicles.

The procurement plan consisted of one primary and one secondary procurement approach. The primary approach was to solicit vehicles from a listing of randomly selected candidates. In excess of eighty-five percent of the vehicles tested were procured from this listing. The balance were procured by the secondary approach which entailed a direct appeal for the required vehicles via the news-media.

The candidate vehicle listing used in the primary procurement approach was obtained through the assistance of the Department of Health, State of Colorado. The Department was able to provide a listing of car owners residing in the local area around the test facility. The listing was derived from postal zip-code areas by the random process of nth name selection whereby each 1, 2, 3, 4 or nth name appearing in the vehicle file is selected. The value of n is determined by the total number of vehicles appearing in the areas of interest versus the number of candidate vehicles requested. These candidate vehicles were subsequently solicited by means of a mass mailing.

Mailing materials consisted of an introductory letter from ATL and a post-paid information reply card which received EPA approval before they were employed. The information reply cards contained certain vehicle identifying information and solicited additional vehicle and other information not within the capacity of the mailing firm to provide. The returned reply-cards were subsequently used in selecting the required vehicles.

2.3.2 Incentives

Certain incentives were offered and provided to enhance response to the mailing. These were:

A $100 U.S. Savings Bond

Return of the test vehicle with a full tank of fuel

The use of a late model, fully insured loan vehicle for the time the owner's vehicle was undergoing tests

Fuel for the loan vehicle

2.3.3 Test Vehicle Selection

We based the preliminary vehicle selection on vehicle identification information provided on the reply cards versus the EPA-provided listing and contacted those owners whose vehicles were reported to best meet the selection criteria. Acceptable substitute vehicles were utilized when necessary. The first personal contact with the owner was by telephone at the number provided on the reply card. During this contact, the supplied information was verified, any void in the information was filled and an interview to screen atypical vehicles was administered. If the vehicle appeared suitable the vehicle was scheduled into the laboratory for tests. A more extensive inspection and screening was subsequently completed at the laboratory to confirm suitability of the vehicle for tests. The actual vehicle selection is presented in Table 1 later in this report.

2.3.4 Test Plan

As described earlier, the overall evaluation was conducted on two vehicle divisions designated as Group A and Group B. A segment of Group A received an initial test sequence and one or more additional test sequences. A segment of Group B followed the Group A plan through the initial test sequence and an inspection of the engine and emission control components and subsequently returned to its owner. The paths the vehicles followed relative to both portions are shown in the flow diagram of Figure 1 which may be referenced in the discussions which follow.

2.3.4.1 Restorative Maintenance Evaluation - Upon the arrival of the candi-

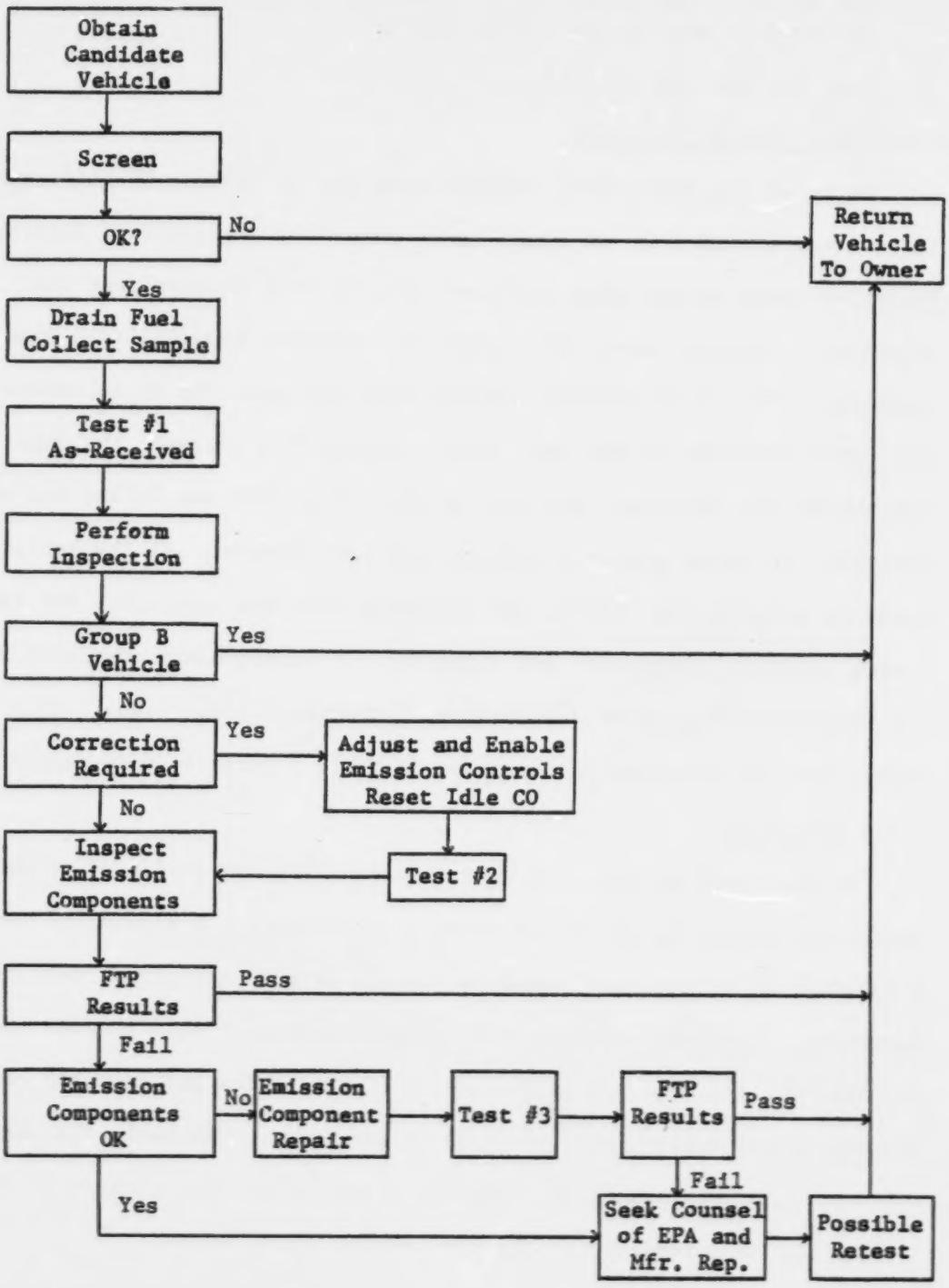


Figure 1, RESTORATIVE MAINTENANCE EVALUATION TEST PLAN

date at the laboratory, the vehicle was given an examination to determine its suitability for use in the program. Included in this examination was a verification that the vehicle had not exceeded the age and mileage limitations, that it had not been subjected to unusual operation, that it had not been extensively modified, and that it was in a safe condition for testing. Also during this screening process, a sample of tank fuel was drawn and tested for lead (Pb) content. The lead limit on vehicles requiring unleaded fuel was 0.05 grams Pb per gallon. This limit is identical to that allowed in the Federal Register for unleaded fuel.

The outcome of this screening accepted or rejected the vehicle for further testing. A modest amount of modification, i.e. maladjustment and disablement, was expected. However, a vehicle having undergone a modification of any kind which was not readily, inexpensively, or ultimately restorable was rejected at this point. Normally, ATL determined the acceptability of a vehicle although more complex decisions were made jointly by the manufacturer, the EPA, and ATL. The manufacturer was brought into the process if, on the basis of an interview with the owner, the vehicle was believed to have had an unusually great number of warranty claims against it. While a failing mark in a number of areas did not necessarily disqualify a candidate, excessive age or mileage, extensive modifications, improper use, or indications that a vehicle designed to operate on unleaded fuel had used leaded fuel resulted in immediate rejection. Concurrent with the latter part of this examination, the owner was given an interview, the results of which were documented on a questionnaire form. If accepted on the basis of this screening inspection and interview, vehicle exchange agreements were completed, the owner was further informed of the purpose of the study, his permission

was obtained relative to possible maintenance of the vehicle and the vehicle was retained for use in the evaluation.

Approximately 43 vehicles were delivered to the laboratory for this initial screening. Of these, 1 was rejected and the required quantity of forty-two were accepted.

Once accepted at the laboratory, the fuel in each vehicle was drained. Two samples of the drained, as-received fuel were taken. One of the samples was made available to the manufacturer; the other was retained for analysis by the EPA. The first actual test sequence began after the as-received fuel was drained and replaced with test fuel to the prescribed charge of 40 percent of tank volume. The charge relative to any subsequent test sequences was merely to restore tank fuel to the 40 percent level.

Each of the test sequences described below consisted of: operation of the vehicle for 10 minutes on city streets; a 12 to 24 hour soak period during which the vehicle remained unstarted at ambient temperatures from 68°F to 86°F; the Federal Test Procedure (FTP) excluding the evaporative emission test segments but including the cold transient, cold stabilized and hot transient phases of the FTP; the Highway Fuel Economy Test; five short cycle tests including the Federal Short Cycle Test, a composite of the New Jersey ACID and New York Short Tests, the Clayton Key Mode Test, the Two Speed Idle Test and the Federal Three Mode Test; and, following the dynamometer sequence, the measurement of basic engine parameters. FTP emission results were calculated shortly after completion of the sequence to facilitate decision-making and to expedite routing of the vehicle through the program. Details concerning preconditioning, performance of the above tests and considerations given each vehicle manufacturer relative

to evaporative emission control system configurations during the tests are provided under TEST PROCEDURES, 2.5, of this report.

With reference again to the Figure 1 flow diagram, Test #1 was conducted with the vehicle in the as-received condition. Any maladjustment or disablement found during the initial examination of the vehicle had not been corrected at this point.

Following Test #1, the inspection for Maladjustment or Disablement was performed. For the purpose of this examination, the pass-fail decision was based solely on whether the emission control parameters or components had been subjected to either or both of these actions or not. Areas that were in question due to deterioration or production defects were disregarded at this point but were subsequently treated as failures during functional checks of the emission control parameters and components. After completion of the Maladjustment and Disablement Inspection, the Group B sequence was complete. With respect to a Group A vehicle, if any maladjustments of disablements were discovered, these were corrected and Test #2 was conducted.

Following the finding that no maladjustments or disablements had been performed or the correction of these and the subsequent performance of Test #2; the Emission Components Inspection was performed. As a practical matter, the Maladjustment/Disablement Inspection and the Emission Component Inspection were performed concurrently, when applicable. Failures relative to the Emission Component Inspection were not corrected in conjunction with this inspection but were corrected in conjunction with the Emission Component Repair actions prior to Test #3.

At this point, FTP results from the most recent test (normally #1 but sometimes #2) were examined. If the vehicle passed the Federal Emission

Standards, it was returned to its owner. Vehicles which failed the Federal Emission Standards on this test were subjected to the Emission Component Repair action.

The Emission Component Repair consisted of the correction of malfunctioning emission control devices and other emission related components. Test #3 followed these repair actions. A consultation was held with the EPA and the vehicle manufacturer concerning the vehicle which failed Federal Emission Standards relative to this test. This consultation was followed either by maintenance and a retest or the return of the vehicle to its owner.

2.4 TEST FACILITY AND EQUIPMENT

The test facility and equipment are located at 19900 E. Colfax Avenue, Aurora, Colorado. This is a permanent facility, situated six miles to the east of Denver at an altitude of 5480 feet above sea level.

The FY 75 Emission Factors Program immediately preceded the Restorative Maintenance Evaluation and the related facility and equipment initial check-out was conducted in conjunction with the FY 75 Emission Factors final check-out.

Other daily, weekly, bi-weekly, and monthly calibration and cross-check frequencies and procedures were performed under the related Emission Factors program and specifications.

2.5 VEHICLE TEST, INSPECTION AND MAINTENANCE PROCEDURES

Each vehicle was subjected at each test point to a prescribed sequence of preparation, preconditioning, testing and de-prepping procedures. This sequence was performed as follows:

Vehicle Preparation

Federal Test Procedure

Highway Fuel Economy Test

Federal Short Cycle

New Jersey ACID/New York Short Test Composite

Clayton Key Mode Test

Two Speed Idle Test

Federal Three Mode Test

After-Test Procedures

The various inspection, adjustment, tune-up and maladjustment procedures were performed in accordance with the test plan. Details on these, testing and other procedures are provided in paragraphs which follow.

2.5.1 Vehicle Preparation

As described earlier, the test sequence began with the fueling of the vehicle. Prior to the first test the as-received fuel was drained from the vehicle. In this process fuel was drained either from the tank filler neck or from the supply line to the engine. An electrically powered gear-type pump was used for this purpose. Separate one-pint samples from each tank were retained for the vehicle manufacturer and the EPA. Following the draining process, the tank was charged to 40 percent of tank capacity with a suitable Indolene fuel. The Indolene fuels were obtained from American Oil Company from its stocks in the Detroit area and delivered in 55 gallon drums. Prior to the second and subsequent test sequences the vehicle tank was merely topped-off to the 40 pecent level with the appropriate fuel. Caution was exercised relative to the fuel in that opened drums were resealed after each use and unleaded fuel dispensing equipment was used only in connection with the unleaded fuel.

Some time after the refueling process was completed, the vehicle was operated on city streets to purge as-received fuel from the carburetor and

fuel lines and to evaluate warm engine driveability characteristics. Such operation continued: a minimum of 10 minutes; until engine temperature had stabilized or; until the driveability evaluation was completed; whichever occured last. Following this process the vehicle was immediately driven to the soak area and shut-down to begin a prescribed 12 to 24 hour soak before the Cold Start FTP.

2.5.1.1 Vehicle Driveability Evaluation - Driveability evaluations were performed from a warm and a cold engine start. The warm driveability evaluation was conducted in connection with the city street, fuel purging operation while the cold engine evaluation was conducted in conjunction with the cold transient phase of FTP dynamometer operation. The evaluations are regarded as being modest in that they were performed under limited conditions and were designed to generalize on undesirable elements as opposed to characterizing each of the possible undesirable elements.

The warm engine driveability evaluation consisted of:

A constant speed phase

An acceleration-from-idle phase

A restart after shut-down phase

During the constant speed phase, "stalls" and "pass-outs" were noted during part throttle acceleration to road speed (generally to posted speed limits below 55 mph), acceleration quality was noted, cruise quality was noted, response during slight acceleration was noted, and idle quality at stop was noted. During the acceleration-from-idle phase, acceleration quality at 1/4, 1/2, 2/3 and 3/4 throttle was noted. During the restart after-shut-down phase, cranking time and idle quality after restart were noted. The restart was performed 10 minutes after the engine was shut-down upon com-

pletion of the preceding phases.

The cold engine (dynamometer) driveability evaluation consisted of:

A cold start and idle phase

A drive-away phase

During the cold start and idle phase, initial cranking time and idle quality were noted, "die-outs" and "stalls" were noted, and hesitations during the first acceleration were noted. During the drive-away phase, "stalls" and "pass-outs" during subsequent FTP first cycle accelerations were noted, acceleration quality during this cycle was noted, idle quality after the first cycle was noted, stalls and pass-outs during FTP second cycle accelerations were noted, acceleration quality during the second cycle was noted and idle quality after the second cycle was noted.

In order to reduce the degree of subjectivity in this evaluation, several categories of ratings were used. These are described as:

Excellent - indicating no trace of undesirable elements (smooth, even, responsive).

Good - indicating slight trace, small indication of an undesirable element (initial uneveness, roughness, hesitation, quickly overcome).

Fair - indicating an undesirable element exists yet reliability is maintained (only intermittent misfire, surging, hesitation).

Poor - indicating an undesireable element exists which affects reliability or driver confidence (steady misfire, roughness, lack of power, response).

Fail - indicating extremely unreliable, possible unsafe conditions exist (frequent stalling, die-outs on acceleration, lack of throttle response).

Pass-outs are defined as an "off-idle" stall while die-outs are defined as a stall at idle.

2.5.2 Equipment Preparation

The facility was operated on a three shift per day, five day per week basis. Such continuous operation precluded many of the usual daily laboratory start-up operations. When applicable, however, instruments which had been idle or in a stand-by condition were switched on to begin the warm-up. This included the water heater and mass pump of the CVS and the analytical instruments. During and following the warm-up period, but at least once each day, sensitivity of the automatic sample line leak detection system was checked, NO_x instrument converter efficiency and CVS propane recovery tests were performed, analyzer outputs as indicated by the recorders and the computer were checked for standardization and the dynamometer was warmed-up for a minimum of fifteen minutes at 30 mph if it had not been utilized for testing within the previous two hour period. Speed calibrations of the dynamometer and associated indicating devices were also standardized and the tailpipe sampling system was checked for leaks. During this interval, the soak area temperature trace and other general laboratory quality control documentation from the previous day were collected for evaluation and processing.

2.5.3 Federal Test Procedure

The Federal Test Procedure was conducted in accordance with the procedures listed in 40 Federal Register 126. Those segments of the procedure which deal with fuel evaporative loss measurements were not conducted, however. Consequently, special concessions relating to the configuration of the evaporative emission control system were requested of the EPA and granted to the manufacturer of the vehicle under test.

This version of the FTP is conducted from a cold engine start. Prior

to the test the vehicle remained unstarted for a period of twelve to twenty-four hours at ambient temperatures between 68°F and 86°F. Following this soak interval the inertia weight and load settings of the dynamometer were set to correspond to the weight and load settings for the vehicle next in line to be tested. A non-test vehicle was used for this purpose. The manufacturer prescribed the settings which were those used for testing of the pre-production versions of the respective vehicles as part of the EPA emission certification process for each vehicle model-year.

Following the load-set, the test vehicle was placed on the dynamometer. The test equipment was prepared and placed in the test start-up configuration. Simultaneously, the vehicle engine was started and exhaust sampling was initiated. This sampling continued during the 505 second, 3.59 mile cold transient phase of the test. At the 505 second point the sample was diverted from the first sampling bag of the CVS to the second. The second bag was used to collect the exhaust sample from vehicle operation over the 3.91 mile cold stabilized phase of the test. At the end of this phase the engine was stopped, cold stabilized phase sampling was terminated and the vehicle was soaked on the dynamometer for a period of ten minutes $\pm$ one minute. At the end of this period the engine was restarted at which time exhaust sampling was once again initiated and continued through the 505 second, 3.59 mile hot transient phase of the test. This concluded the Federal Test Procedure.

CVS sample and background bags were analyzed within 10 minutes after completion of the respective phases of the test. Temperature of the air in front of the vehicle during the test was maintained between 68°F and 86°F.

2.5.4 Highway Fuel Economy Test

The Highway Fuel Economy Test consists of vehicle operation on the dynamometer over the 10.242 mile, 765 second HFET driving schedule. This test followed the FTP and was started with the vehicle in a warmed-up condition. A warmed-up condition was defined as at least 7.5 miles of cyclic operation having been completed within the thirty-five minute period preceding the start of the HFET. The vehicle was preconditioned for this test by operating it at 50 miles per hour for a period of three minutes. Within one minute of the end of this cruise period the vehicle was brought to an idle condition and the test was started. At the start of the sampling period, CVS diluted exhaust is diverted into the sample bag and collected during vehicle operation over the HFET driving schedule. Sampling is terminated at the end of the schedule and the content of the sample bag is analyzed for emission and fuel economy determination. Load settings, inertia weights and the vehicle speed and underhood cooling air temperature tolerances of the HFET are identical to those of the Federal Test Procedure.

2.5.5 New Jersey ACID/New York Short Test Composite

The New Jersey ACID/New York Short Test Composite is a six mode mass (CVS) emission test of 75 seconds duration which follows the driving schedule listed as follows:

Mode	Time in mode (secs)
Idle	22
0-30 mph acceleration	15
30 mph cruise	15
30-10 mph deceleration	12
10 mph cruise	7
10-0 mph deceleration	4
	75

On all vehicles the dynamometer is loaded to an inertia weight of 3,000 lbs and 3.5 indicated horsepower at 30 miles per hour. Manual transmission shift points are the same as those observed during the Federal Test Procedure. Flow into the sample bag was such that a minimum of two cubic feet of dilute exhaust sample was provided for test analysis.

2.5.6 Clayton Key Mode Test

The Clayton Key Mode Test consists of three steady state operating conditions. An undiluted (tailpipe) exhaust sample is analyzed during each of the three conditions.

Clayton Key Mode Test Conditions

Vehicle Class (lbs)	Transmission Range/Gear	Meter Dyno Load hp @ mph	High Cruise (mph)	Low Cruise (mph)	Idle
2000 to 2800	Drive or Third	15 @ 38	36-38	22-25	Automatic Transmission in Drive
2801 to 3800	Drive or High	24 @ 46	44-46	29-32	
3801 and up	Drive or High	30 @ 50	48-50	32-35	

For the purpose of this program, the Clayton Key Mode Test was preceded by a soak period no longer than 20 minutes from the last sustained period of vehicle operation. At the end of this period the vehicle was operated a maximum of three minutes at the specified speed and load with the engine compartment open and the underhood cooling fan on. The Federal Test Procedure inertia weight was engaged during the test. The mode sequence was in the order of high cruise, low cruise and idle. At each speed equilibrium of vehicle speed and the HC, CO and NO_x readings were maintained

for 30 seconds before the readings were recorded. Operating conditions for the test are as listed.

2.5.7 Two Speed Idle Test

The Two Speed Idle Test consists of two steady state operating conditions. An undiluted (tailpipe) exhaust sample is analyzed during each of the two conditions. The first is a mode in which the engine is operated at 2250 engine rpm with the transmission in neutral. During the second, the engine is operated at normal idle with the transmission in neutral also.

In this program, the Two Speed Idle Test was also preceded by a soak period no longer than 20 minutes from the last sustained period of vehicle operation. At the end of the soak period the vehicle was operated for a maximum of three minutes at 2250 engine rpm and then at curb idle. At each speed, equilibrium of vehicle speed and the CO, HC and NO_x readings were maintained for 30 seconds before the readings were recorded.

2.5.8 Federal Three Mode Test

The Federal Three Mode Test is similar to the Clayton Key Mode Test

Federal Three Mode Test Procedure Conditions

Vehicle Class (lbs)	Transmission Range/Gear	Mode		
		High Speed Speed @ Act Hp	Low Speed Speed @ Act Hp	Idle
Up to 2500	Drive/3rd	50 @ 21	30 @ 9	Auto Trans in Neutral and Drive Manual Trans in Neutral
2501 to 3500	Drive/High	50 @ 26	30 @ 12	
3501 to 4500	Drive/High	50 @ 31	30 @ 15	
above 4500	Drive/High	50 @ 36	30 @ 18	

in that it also consists of three steady state operating modes and measurement of tailpipe emissions. Since actual (as opposed to indicated) dynamometer horsepower settings are used, additional dynamometer calibrations at 30 mph and 50 mph were performed. Federal Test Procedure inertia weights were engaged during the test. The mode sequence was in the order of high cruise, low cruise, and idle. At each speed, equilibrium of vehicle speed and the CO, HC and NO_x readings were maintained for 30 seconds before the readings were recorded. Operating conditions for this test are as listed.

2.5.9 Vehicle After-Test Inspection, Adjustment and Maintenance Procedures

The After-Test Procedure involved the measurement of basic engine parameters. These parameters consisted of; basic ignition timing, dwell (if applicable), idle speed, undiluted idle CO and undiluted idle HC. In performing these measurements, the procedures outlined on the emission data sticker found in the engine compartment were followed.

Other of the inspection, adjustment and maintenance procedures are described, in general, in paragraphs which follow:

2.5.9.1 Maladjustment and Disablement Inspection - The Maladjustment and Disablement Inspection (Appendix I) was designed to determine whether the emission control parameters or components had been subjected to either or both of these actions. In making this determination, the manufacturer's service manual was referenced. The scope of this inspection was as follows:

> The induction system was inspected to determine if it was intact and complete. Included was a determination that the heated air system was operative and that the vacuum lines controlling operation of the system had not been disconnected, plugged or rerouted.

The carburetor and fuel system was inspected to determine if it was intact and complete. This inspection was to determine that the choke system had not been modified or misadjusted, that the idle mixture limiter caps were not missing or broken and that the fuel tank filler neck had not been altered.

The ignition system was inspected to determine if it was intact and complete. Included was a determination of; the distributor number, initial timing, mechanical advance at an appropriate intermediate speed and the points at which vacuum advance began and when maximum vacuum advance was attained.

The exhaust gas recirculation (EGR) system was inspected to determine if it was intact and complete. Included was a verification that the vacuum signal lines had not been disconnected, plugged or rerouted and that the entire system was operable.

The air pump (secondary air) system was inspected to determine if it was intact and complete.

The positive crankcase ventilation (P.C.V.) system was inspected to determine if it was intact and complete.

The exhaust handling system was inspected to determine if it was intact and complete.

The evaporative emission control system was inspected to determine if it was intact and complete.

Any other components related to exhaust emission control were inspected to determine if they were intact and complete.

2.5.9.2 Emission Component Inspection - This inspection was designed to determine the operational status of each component within the emission control system. For the purpose of this inspection, components that were not operating properly but yet had not been maladjusted or disabled were judged to be defective. Specific procedures relative to each vehicle and manufacturer were obtained from the respective service manuals. The procedures are too detailed to list. Insight into the Emission Component Inspection may be gained through an inspection of the reporting forms applicable to the process. These are also provided in Appendix I.

2.5.9.3 Idle Speed and Mixture Inspection - The Idle Speed and Mixture

Inspection was designed to determine if these parameters were out of the prescribed tolerances and, if so, to what extent. Specific procedures relative to each vehicle and manufacturer were obtained and/or developed from the respective service manual. These procedures are presented in Appendix I.

2.5.9.4 Emission Component Repair - Components found to require attention under the Emission Component Inspection were corrected when the vehicle reached this point. Insight into the details of the Emission Component Repair may be gained through a inspection of the reporting forms applicable to the process. These, also, are provided in Appendix I.

2.6 DATA HANDLING

The raw data and associated materials were subjected to a systematic and rigorous sequence of collection, preliminary review, packaging, and an editing prior to final processing. This sequence is described below.

2.6.1 Data Collection

Critical parameters associated with the test were documented on strip-chart recorders. Included in these parameters were the temperature of the soak area, wet and dry bulb temperature of the air supplied to the vehicle during the test, temperature of the dilute exhaust within the CVS and driver/vehicle performance over the various driving schedules. Driver/vehicle performance recordings contain a speed calibration before the test and a calibration check after the test. Recorders associated with the emission analytical system were allowed to run continuously during the prescribed analyzer calibration, sample measurement and calibration check sequence.

The NOVA 2 computer, the primary component in the data acquisition

system, was utilized to collect and integrate CVS sample and background bag HC, CO, CO_2 and NO_x data. This component of the system was also used to generate the speed/time profiles of the various driving schedules, which are based on a 10 speed-point/second smoothed signal, and to totalize the revolutions of the CVS mass pump during each of the mass emission test segments.

Routing of the vehicle through the preconditioning, test, inspection and maintenance sequences was controlled through the utilization of a data form packet which was assigned to each vehicle. This packet contained all forms necessary to document the procedures to be applied to the given vehicle. Assembly of the packet was in the order in which the procedures were to be applied. Supplements were added as the decisions regarding further action on the vehicle were made.

Control over the vehicle soak period was maintained and documented through utilization of the reporting block provided on one of the packet forms. A separate copy of this form was used in connection with each cold start test. Additional control was exercised to maintain the proper soak interval through the use of posters which were affixed to the vehicle windshields. Each poster contained a numeral which indicated the order in which the vehicle was to appear in the daily testing schedule and a block on which the key-off time relative to the specific vehicle was noted. Testing personnel were also furnished a schedule which indicated the daily testing schedule including the vehicle order and the nominal test time. Personnel performing the preconditioning operations were furnished with a similar schedule indicating the time each vehicle to be tested was to be placed in soak.

Upon completion of a vehicle test, the completed data packet, strip chart recordings, data acquisition system computer punch tape and print-outs pertinent to the test were assembled in preparation for the review process.

2.6.2 Data Processing

Processing of the raw data was performed by both manual and computer operations. Aside from the above mentioned acquisition and reduction (integration) operations performed by the on-line computer and those test parameters monitored by strip chart recorders, also mentioned above, the collection of data was a manual operation. Generally, data were processed using a time share computer system. However, manual verification of strip chart compliance with temperature and speed tolerances, procedural operations and integration of the wet/dry bulb temperature traces was required.

Raw Federal Test Procedure data were processed on a preliminary basis to facilitate the decision making process. The manufacturer's representative was provided machine copies of the preliminary print-out of the FTP data. These and the remaining data were subsequently reprocessed using the same time-share system once the final phases of the data review and edit process were completed. Due to possible changes stemming from the initial review and edit process, the final results may not agree precisely with results supplied to the manufacturers.

2.6.3 Data Review and Editing

All data pertaining to a single vehicle were assembled into a single test packet. The packet contained all raw data sheets, strip chart recordings, data acquisition system punch tape and print-outs pertinent to the vehicle test. These were reviewed for completeness, compliance with temperature and speed tolerances and procedural accuracies on a test by test

basis. Any data deficiencies, out-of-tolerance conditions or procedural inaccuracies were resolved at this point. Resolution was appropriate to the particular discrepancy and covered whatever actions were necessary up to and including a complete rerun of the test. Upon completion of all tests on the vehicle, but before it was returned to its owner, the entire test packet was reviewed and any remaining discrepancies were likewise resolved. The completed packet was subsequently forwarded to the Data Processing department for further processing.

Upon arrival in Data Processing, the data packet was subjected to a third review by personnel who are not directly connected with the tests. This review was similar to, but more comprehensive than, the preliminary reviews performed by the test personnel. Any deficiencies or discrepancies noted at this point were resolved. Following this review, data contained on the on-line computer punch tape generated at the test cell were combined with other of the raw data and entered into temporary time-share computer storage. The stored data were subsequently listed back out and manually proofread against the input data to detect any errors introduced through key-punch operations or transmission difficulties. Errors of this type were corrected at this point. The data were subjected to an edit program when these procedures were completed.

The editing process to which the data were subjected is a computer operation which subjects the critical bits of data or information to a test of reasonableness. Such reasonableness is established if the point in question lies within a pre-determined range or tolerance. For example, the reasonable range for temperature (dry bulb) of air supplied to the front of the vehicle during testing, is 68°F to 86°F, the actual tolerance for this parameter of

the test. If the respective point is outside this range, the computer flags the point indicating a requirement for further investigation. In those cases where an absolute value or values are applicable, any other value appearing in the given location is similarly flagged and investigated. Engine displacement size, where a limited number of sizes are available respective of one vehicle model, is an example of an absolute value to which compliance with the edit program needed also to be demonstrated. Once each problem relating to the flagged points had been resolved, the data were reduced. The computer performed these operations, as well. As a last check, the reduced data were printed-out and subjected to a final review and subjective test of reasonableness before the test was declared valid. When this process was completed, the data were transferred to the EPA in the form of interpreted 80 column punch cards along with the complete data packet.

The EPA conducted a similar review of the data including both raw and processed data. Any discrepencies noted during this process were brought to our attention and resolved in an appropriate manner. The computer data files were corrected accordingly and 80 column punch cards covering the corrected data were resubmitted.

2.6.4 Calculation of Test Results

Mass emission test results were calculated using basic formulae of 40 Federal Register 126. Fuel economy data for these tests were calculated from mass HC, CO and CO_2 results using the carbon balance equation. A hydrogen/carbon ratio of 1.85 was assumed for these fuels. Calculation methods for the particular tests are described below.

2.6.4.1 Federal Test Procedure - FTP results were calculated using Federal

Register equations.

2.6.4.2 Highway Fuel Economy Test - Emission results for this test were calculated using Federal Register equations and a distance constant of 10.242 miles per test. Fuel economy results were calculated using the carbon balance equation.

2.6.4.3 Federal Short Cycle Test - Results for the Federal Short Cycle Test were calculated using Federal Register equations and the distance constant of 0.7536 miles per test.

2.6.4.4 New Jersey ACID/New York Short Cycle Test Composite - Emission results for this test were calculated using Federal Register equations and the distance constant of 0.2792 miles per test.

2.6.4.5 Clayton Key Mode Test - Emission results for this test are comprised of tailpipe concentrations which were given no treatment and are reported as measured.

2.6.4.6 Two Speed Idle Test - Emission results from this test are also comprised of tailpipe concentrations which are reported as measured.

2.6.4.7 Federal Three Mode Test - Emission results from this test are tailpipe readings which are reported as measured.

2.6.4.8 Vehicle After-Test Inspection, Maintenance and Adjustment Procedures - Emission readings taken during these procedures are reported as measured. Data on the basic engine parameters and on emission control and related parameters are reported as measured or observed in terms appropriate to the measurement or observation. Cost data relative to replacement parts are based on either actual retail invoice prices in cases where ATL supplied the parts or retail price quotations provided by the respective manufacturer in cases where the manufacturer supplied the parts.

3. PRESENTATION OF TEST RESULTS

Data that are particularly pertinent to the objectives of the Restorative Maintenance Evaluation are summarized in tabular form in this section. A more detailed presentation is provided in the appendices.

It was not within the scope of the testing laboratory's contract: to perform other than a minimal analysis of the data; to present or discuss it in any detail or; to draw any conclusions from the results. Consequently, relatively little discussion accompanies this section except that which may serve to clarify the test conditions.

3.1 LISTING OF VEHICLES TESTED

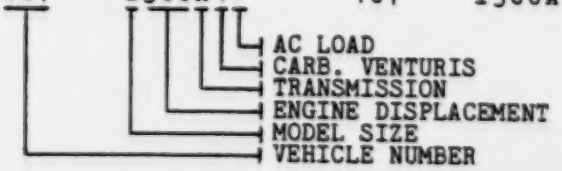
A listing of the Restorative Maintenance Evaluation sample which delineates the number of tested vehicles by manufacturer, make and other identifying information is provided in Table 1.

TABLE 1

LISTING OF VEHICLES ACTUALLY TESTED

DENVER

MANUFACTURER	NO. OF VEHICLES	'A' VEHICLES NO.	'A' VEHICLES DESC.	'B' VEHICLES NO.	'B' VEHICLES DESC.
GENERAL MOTORS					
BUICK	2	015	I350A4*	115	I350A4*
CADILLAC	2	016	I425A4*	116	F425A4*
CHEVROLET	6	017	F350A4*	117	F350A4*
		018	C350A4*	118	C350A4*
		019	I350A4*	119	I350A4*
OLDSMOBILE	2	020	I350A4*	120	I350A4*
PONTIAC	2	021	C350A4*	121	C350A4*
FORD MOTOR CO.					
FORD	10	008	F460A4*	108	F460A4*
		009	X140M2	109	X140M2*
		010	C302A2*	110	C302A2*
		011	I351A2*	111	C351A2*
		012	C400A2*	112	C400A2*
MERCURY	4	013	C302A2*	113	C302A2*
		014	I351A2*	114	I351A2*
CHRYSLER CORP.					
PLYMOUTH	6	001	C225A1*	101	C225A1*
		002	C225A1*	102	C225A1*
		003	C318A2*	103	C318A2*
DODGE	5	004	C225A1*	104	C225A1*
		005	C318A2*	105	C318A2*
		006	I360A4*		
CHRYSLER	3			106	I360A4*
		007	I360A4*	107	I360A4*



3.2 SUMMARY OF FEDERAL TEST PROCEDURE RESULTS

3.2.1 Vehicles Meeting Federal Standards at Successive Stages of Maintenance

Data showing the number of vehicles by manufacturer that met Federal Exhaust Emission Standards at successive stages of the Restorative Maintenance Evaluation portion of the test plan are presented in Table 2.

Vehicle conditions respectively associated with the Test Nos. 1 through 3 of this table were described earlier in some detail under 2.3.4 of this report. A more brief description is provided below:

TEST (Sequence) NO. 1 was conducted on the vehicle in its as-received condition.

TEST NO. 2 was conducted on the vehicle found to have failed the Maladjustment/Disablement Inspection. Corrective action was taken before the test was performed.

TEST NO. 3 was conducted on the vehicle found to have failed Federal Standards based on results from either or both of Test Nos. 1 and 2. Test No. 3 was immediately preceded by a emission component repair.

TABLE 2

VEHICLES MEETING FEDERAL STANDARDS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES

MANUFACTURER & TEST NUMBER	NO. OF VEHICLES	FAILED							PASSED ALL THREE	PASS %
		HC	CO	NOxc	HC&CO	HC&NOxc	CO&NOxc	HC&CO&NOxc		
GENERAL MOTORS										
TEST NO. 1	7	0	0	3	0	0	0	0	4	57
TEST NO. 2	1	0	0	0	0	0	0	0	5	71
TEST NO. 3	1	0	0	1	0	0	0	0	5	71
FORD MOTOR CO.										
TEST NO. 1	7	0	0	3	1	0	1	0	2	29
TEST NO. 2	5	0	2	1	0	0	0	0	4	57
TEST NO. 3	2	0	0	1	0	0	0	0	5	71
CHRYSLER CORP.										
TEST NO. 1	7	0	0	3	0	0	0	0	4	57
TEST NO. 2	3	0	1	0	0	0	0	0	6	86
TEST NO. 3	1	0	1	0	0	0	0	0	6	86
ALL VEHICLES										
TEST NO. 1	21	0	0	9	1	0	1	0	10	48
TEST NO. 2	9	0	3	1	0	0	0	0	15	71
TEST NO. 3	4	0	1	2	0	0	0	0	16	76

TABLE 2 CONT'D

VEHICLES MEETING FEDERAL STANDARDS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'B' VEHICLES

MANUFACTURER & TEST NUMBER	NO. OF VEHICLES	FAILED							PASSED ALL THREE	PASS %
		HC	CO	NOxc	HC&CO	HC&NOxc	CO&NOxc	HC&CO&NOxc		
GENERAL MOTORS										
TEST NO. 1	7	0	0	3	1	0	0	0	3	43
TEST NO. 2	0	0	0	0	0	0	0	0	3	43
TEST NO. 3	0	0	0	0	0	0	0	0	3	43
FORD MOTOR CO.										
TEST NO. 1	7	0	0	2	1	0	0	0	4	57
TEST NO. 2	1	0	0	0	0	0	0	0	5	71
TEST NO. 3	0	0	0	0	0	0	0	0	5	71
CHRYSLER CORP.										
TEST NO. 1	7	0	0	0	0	0	0	0	7	100
TEST NO. 2	0	0	0	0	0	0	0	0	7	100
TEST NO. 3	0	0	0	0	0	0	0	0	7	100
ALL VEHICLES										
TEST NO. 1	21	0	0	5	2	0	0	0	14	67
TEST NO. 2	1	0	0	0	0	0	0	0	15	71
TEST NO. 3	0	0	0	0	0	0	0	0	15	71

TABLE 2
SUMMARY OF TEST RESULTS Vs FEDERAL STANDARDS

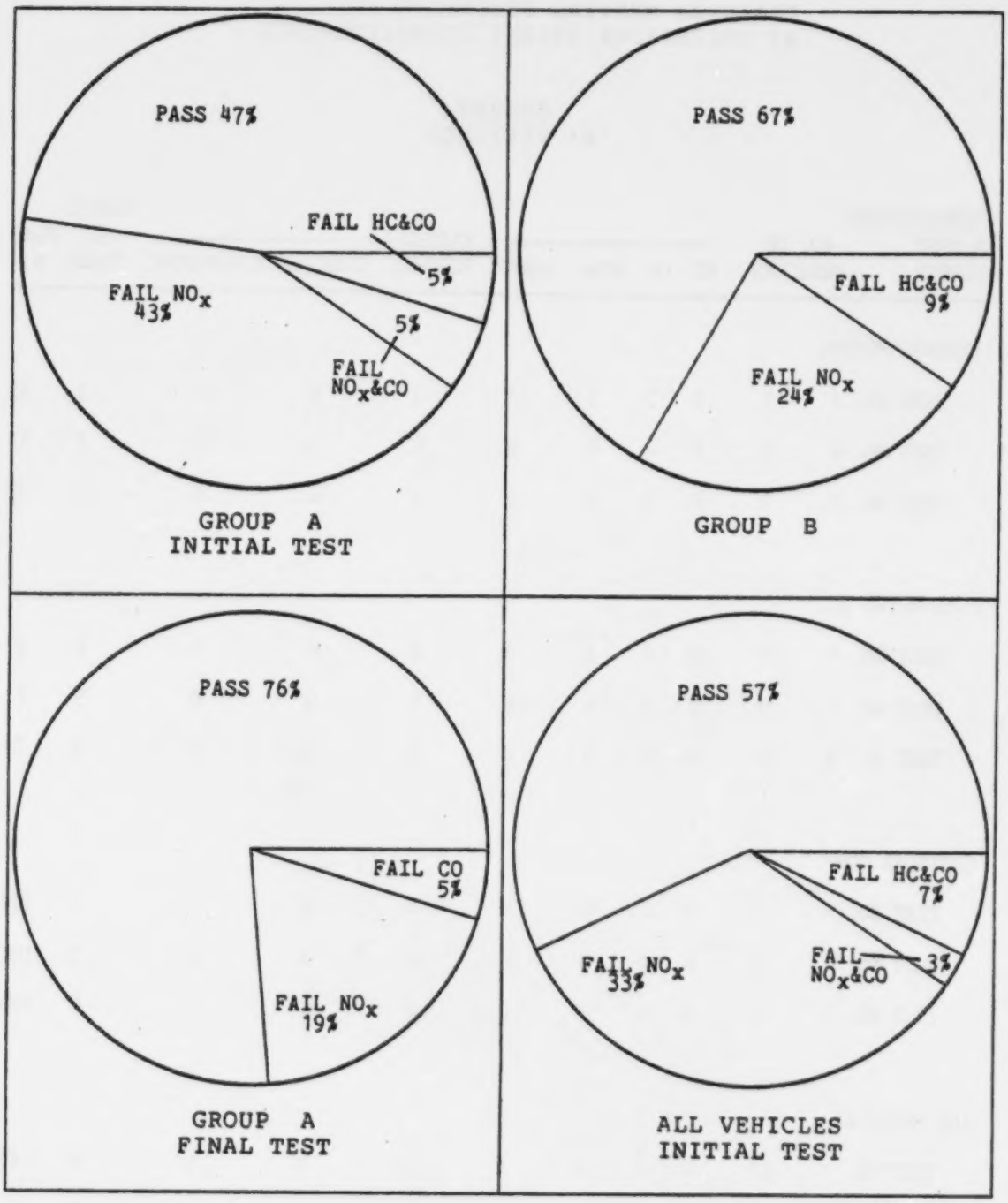
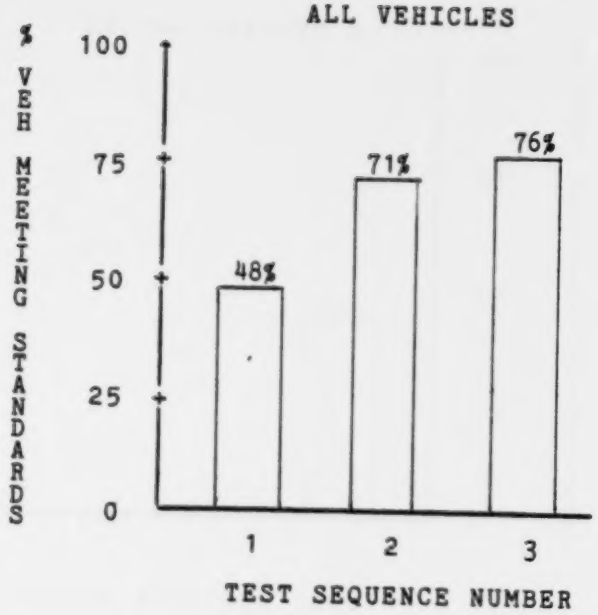
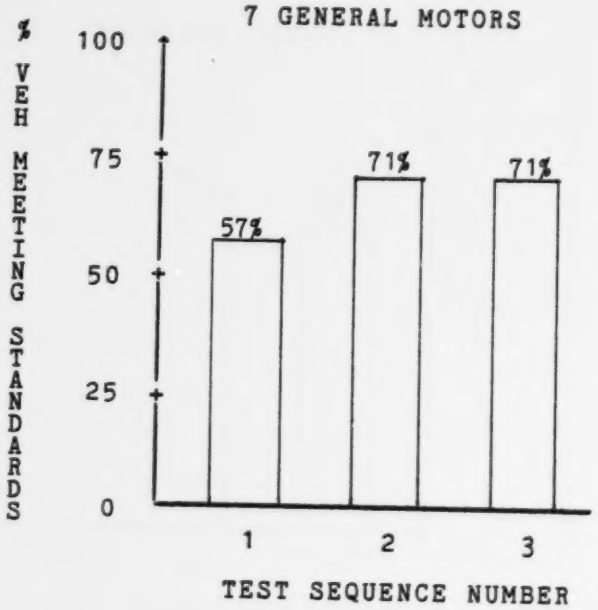


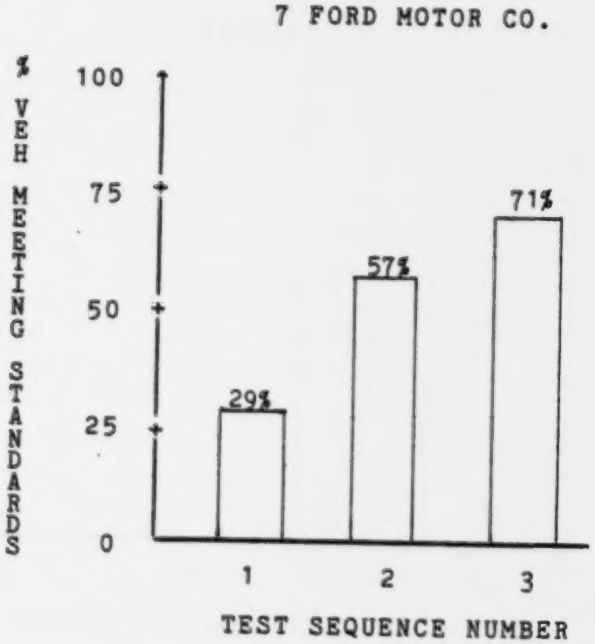
TABLE 2

VEHICLES MEETING FEDERAL STANDARDS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES







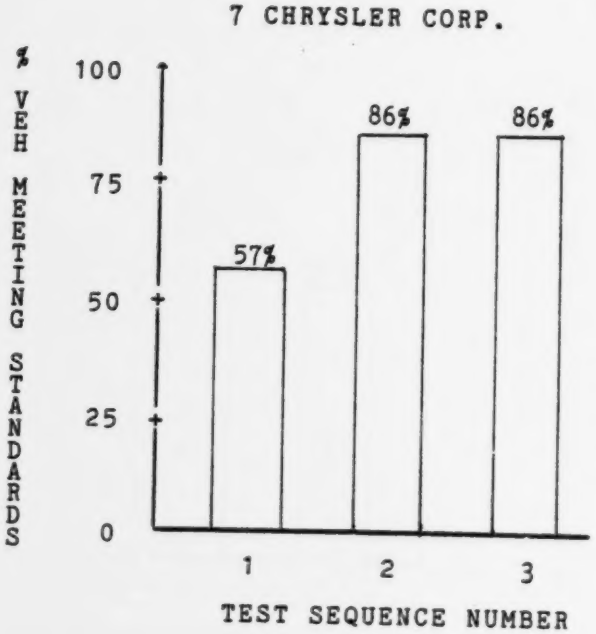
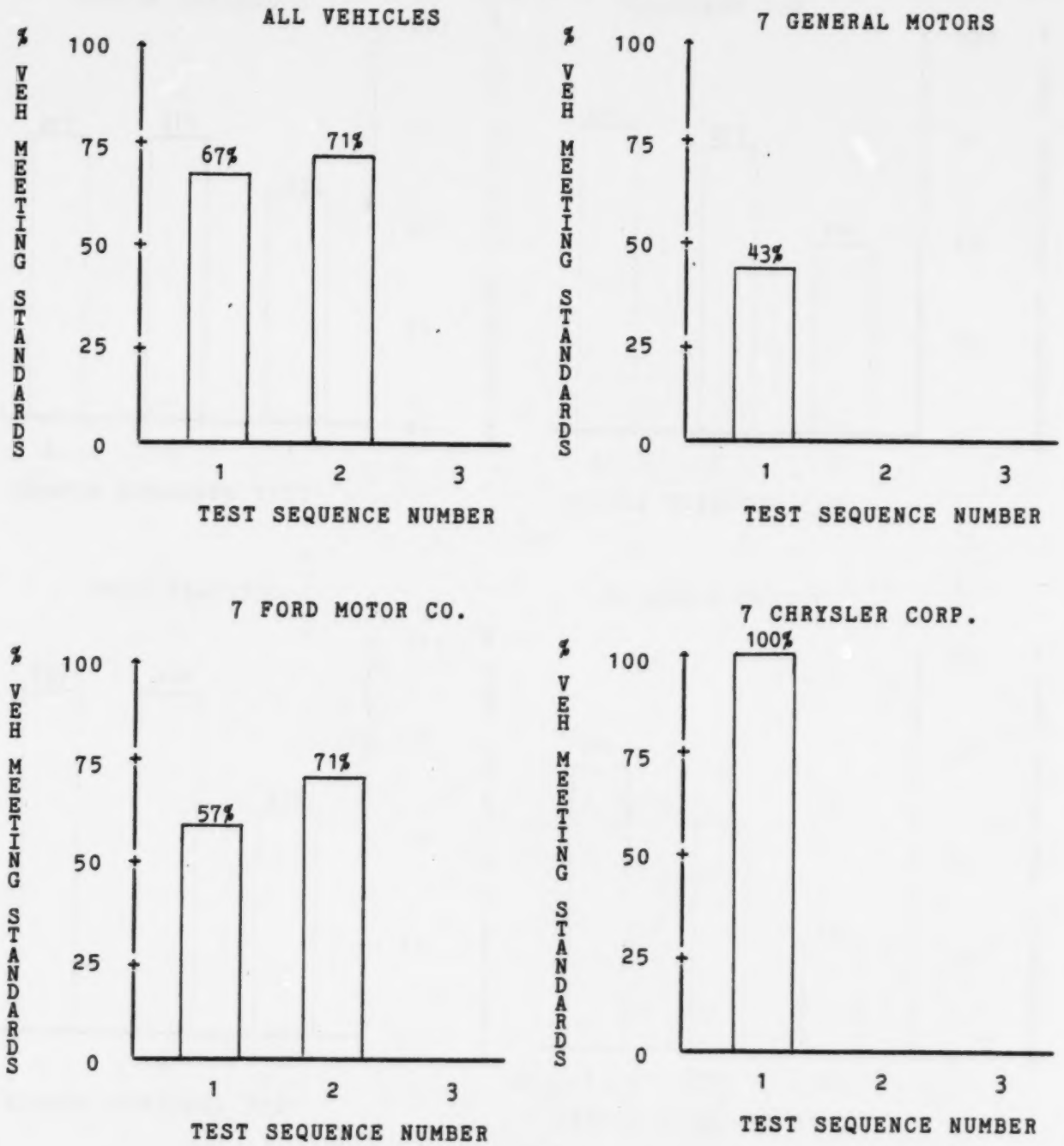


TABLE 2

VEHICLES MEETING FEDERAL STANDARDS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'B' VEHICLES



3.2.2 As-Received Federal Test Procedure Results as Percent of Federal Standards

Data relative to the as-received (Test No. 1) Federal Test Procedure and Highway Fuel Economy and the Federal Emission Standards are presented in Table 3. This information is interpreted as follows:

TEST 1 AVG indicates as-received emission test result averages for the vehicles of a given manufacturer.

AVG TEST PASSED indicates emission result averages for the first test passed by the respective vehicles or the last test for vehicles not able to meet standards.

TEST 1, % FROM STD indicates the percent that average Test No. 1 emission results are above or below the Federal Standards.

% AVG TEST PASSED indicates the percent that AVG TEST PASSED vehicle emission results are above or below the Federal Standards.

TABLE 3

SUMMARY OF FEDERAL TEST PROCEDURE RESULTS
AND HIGHWAY FUEL ECONOMY RESULTS

DENVER
'A' VEHICLES

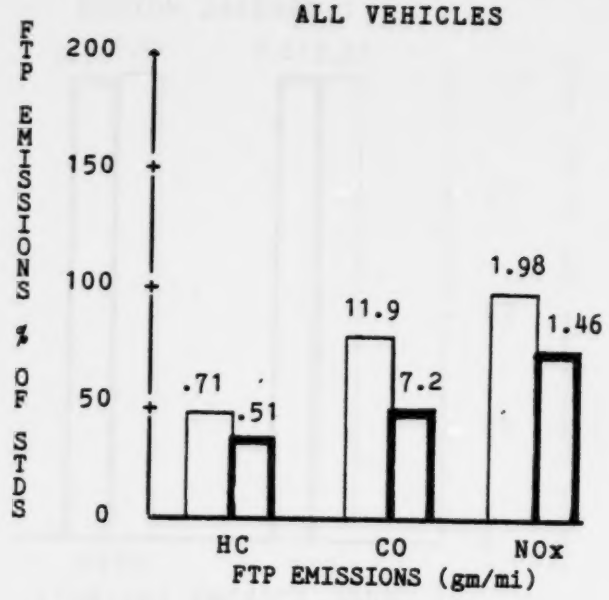
MFG & TEST TYPE	NO. OF VEHICLES	FTP HC	FTP CO	FTP NOxc	FTP MPG	HFET MPG
GENERAL MOTORS TEST 1 AVG	7	0.41	4.85	1.90	12.79	17.65
AVG TEST PASSED	7	0.42	5.51	1.80	12.76	17.38
TEST 1 % FROM STD		-73	-69	-7	0	-2
% AVG TEST PASSED		-73	-64	-12		
FORD MOTOR CO. TEST 1 AVG	7	1.26	23.23	2.10	13.00	17.55
AVG TEST PASSED	7	0.66	6.54	1.62	13.03	17.50
TEST 1 % FROM STD		-18	50	3	0	0
% AVG TEST PASSED		-57	-58	-21		
CHRYSLER CORP. TEST 1 AVG	7	0.46	7.51	1.94	12.82	17.00
AVG TEST PASSED	7	0.45	9.40	0.95	12.24	16.10
TEST 1 % FROM STD		-70	-51	-5	-5	-5
% AVG TEST PASSED		-71	-39	-53		
ALL VEHICLES TEST 1 AVG	21	0.71	11.87	1.98	12.87	17.40
AVG TEST PASSED	21	0.51	7.15	1.46	12.67	16.97
TEST 1 % FROM STD		-54	-23	-3	-2	-2
% AVG TEST PASSED		-67	-54	-29		

TABLE 3

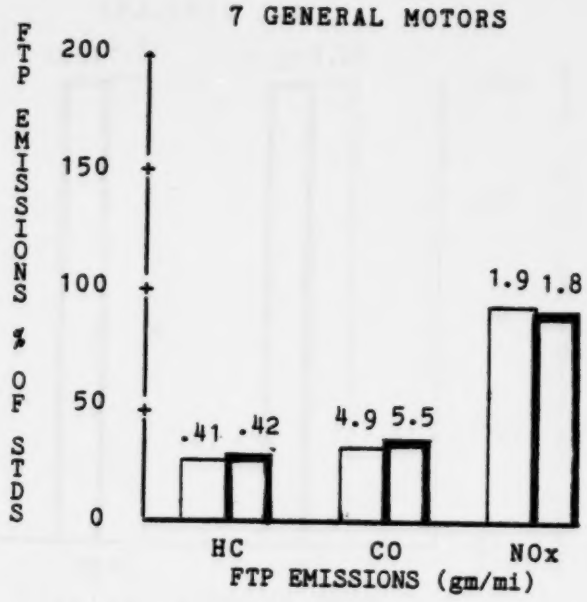
SUMMARY OF FEDERAL TEST PROCEDURE RESULTS

DENVER
'A' VEHICLES

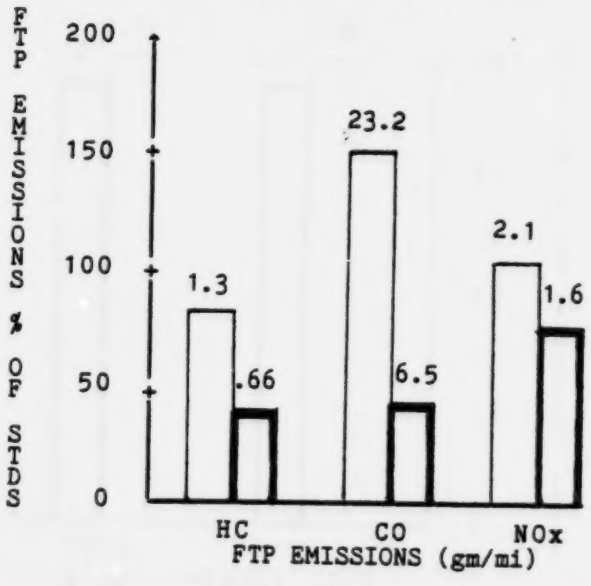
ALL VEHICLES



7 GENERAL MOTORS



7 FORD MOTOR CO.



7 CHRYSLER CORP.

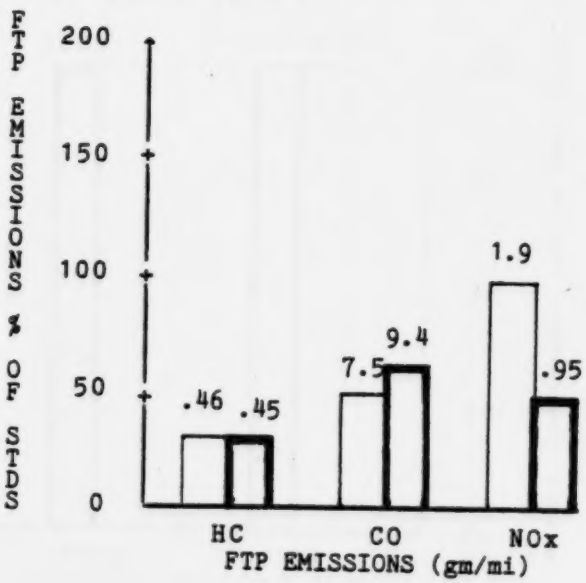
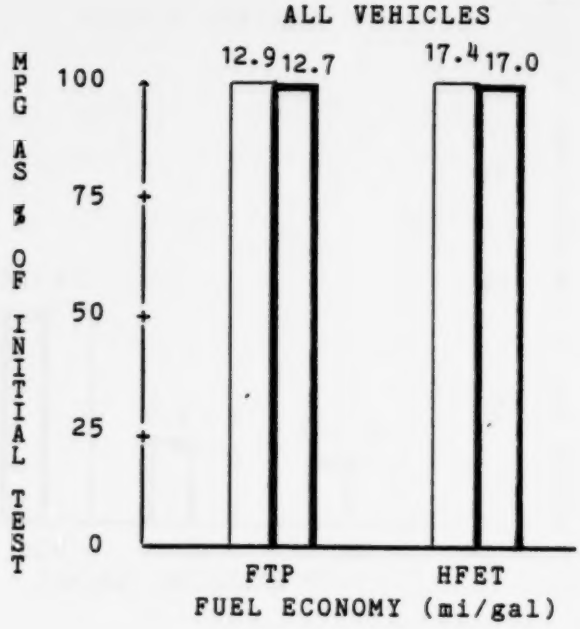
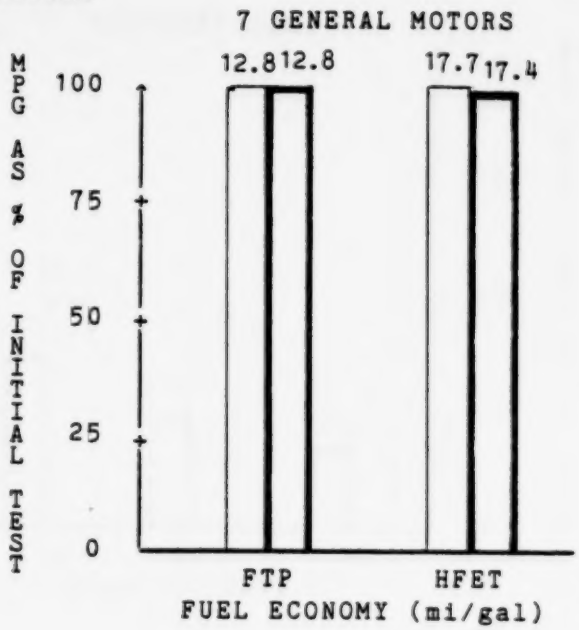


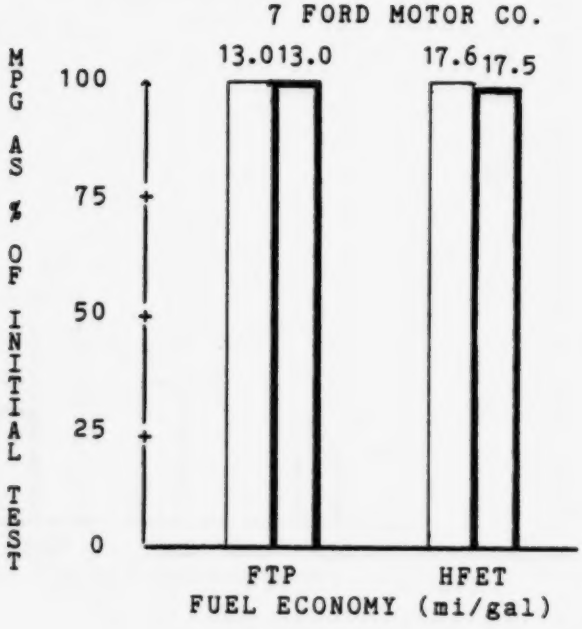
TABLE 3

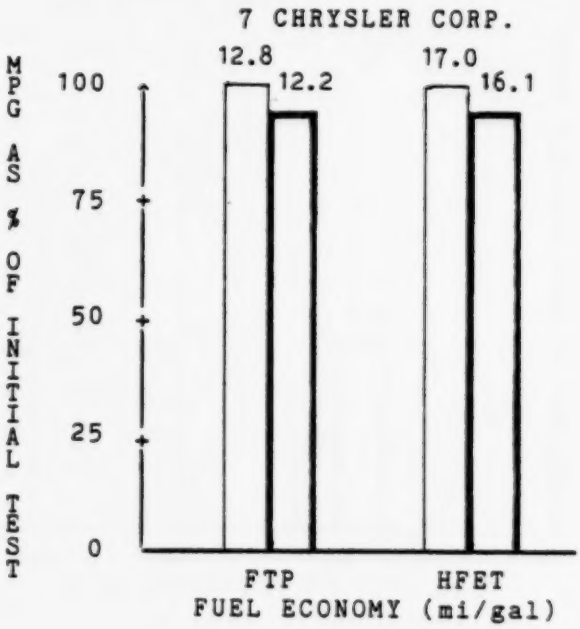
SUMMARY OF FUEL ECONOMY RESULTS

DENVER
'A' VEHICLES









3.3 SUMMARY OF MALADJUSTMENT AND DISABLEMENT

A summary of the occurances of maladjustment and disablement actions relative to the major engine and emission control systems and the vehicle manufacturer is presented in Table 4. The only explanation believed necessary here is that: 1) these actions may have been taken on more than one major system relative to a given vehicle or; 2) none of these actions were taken relative to a single vehicle. As a consequence, the total number of vehicles by manufacturer on which the actions were taken need not be equal to the total number of occurances appearing in the manufacturer column.

TABLE 4

SUMMARY OF MALADJUSTMENT / DISABLEMENT OCCURANCES

DENVER
'A' VEHICLES

	GENERAL MOTORS 7 VEHICLES		FORD 7 VEHICLES		CHRYSLER 7 VEHICLES		ALL VEHICLES 21 VEHICLES	
SYSTEM	NO.	%	NO.	%	NO.	%	NO.	%
INDUCTION	0	0	1	14	1	14	2	10
CARBURETOR	1	14	4	57	4	57	9	43
IGNITION	1	14	1	14	4	57	6	29
E.G.R.	0	0	1	14	2	29	3	14
AIR PUMP	0	0	0	0	0	0	0	0
P.C.V.	0	0	0	0	0	0	0	0
EXHAUST	0	0	0	0	0	0	0	0
EVAP. CONTROL	0	0	0	0	0	0	0	0
INT ENG & MIS	0	0	0	0	0	0	0	0
MULTIPLE OCCURANCES	0	0	2	29	4	57	6	29

TABLE 4 CONT'D

SUMMARY OF MALADJUSTMENT / DISABLEMENT OCCURANCES

DENVER
'B' VEHICLES

SYSTEM	GENERAL MOTORS 7 VEHICLES		FORD 7 VEHICLES		CHRYSLER 7 VEHICLES		ALL VEHICLES 21 VEHICLES	
	NO.	%	NO.	%	NO.	%	NO.	%
INDUCTION	0	0	0	0	1	14	1	5
CARBURETOR	4	57	6	86	5	71	15	71
IGNITION	5	71	0	0	3	43	8	38
E.G.R.	0	0	1	14	0	0	1	5
AIR PUMP	0	0	0	0	0	0	0	0
P.C.V.	0	0	0	0	0	0	0	0
EXHAUST	0	0	0	0	0	0	0	0
EVAP. CONTROL	0	0	0	0	0	0	0	0
INT ENG & MIS	0	0	0	0	0	0	0	0
MULTIPLE OCCURANCES	3	43	0	0	3	43	6	29

3.4 SUMMARY OF RESTORATIVE MAINTENANCE COSTS

Costs to perform the various inspection and maintenance actions and costs to make corrections based on the outcome of these actions are totalized by manufacturer in Table 5. Labor costs in this summary are based on actual time measurements as opposed to a flat-rate estimate. A rate of $15.00/hour was applied to the actual time. Parts costs are based on the list (retail) price for the parts installed in the course of these actions.

TABLE 5

SUMMARY OF VEHICLE RESTORATIVE MAINTENANCE COSTS
PER VEHICLE

DENVER

'A' VEHICLES

ITEM	GENERAL MOTORS	FORD	CHRYSLER	AVERAGE ALL VEHICLES
MALADJUSTMENT / DISABLEMENT				
INSPECTION LABOR	$8.36	$8.36	$8.14	$8.29
CORRECTION LABOR	$1.07	$1.07	$2.36	$1.50
CORRECTION PARTS	$0.00	$0.00	$0.00	$0.00
EMISSION COMPONENT FUNCTION CHECK				
INSPECTION LABOR	$8.14	$15.21	$14.57	$12.64
CORRECTION LABOR	$0.21	$0.00	$0.00	$0.07
CORRECTION PARTS	$0.06	$0.00	$0.00	$0.02
IDLE CO SET				
LABOR	$1.50	$7.07	$4.71	$4.43
TOTAL LABOR	$19.28	$31.71	$29.78	$26.93
TOTAL PARTS	$0.06	$0.00	$0.00	$0.02
TOTAL COST	$19.34	$31.71	$29.78	$26.95

* BASED ON $15.00 PER HOUR CHARGE ON ACTUAL LABOR TIME

3.5 SUMMARY OF EMISSION COMPONENT FAILURES

The emission component failures relative to each manufacturer are summarized in Table 6. A separate listing is provided for each vehicle manufacturer.

TABLE 6

SUMMARY OF EMISSION COMPONENT FAILURES

DENVER

SYSTEM	NUMBER OF VEHICLES	NUMBER OF FAILURES	PERCENT FAILURES
GENERAL MOTORS			
'A' VEHICLES	7		
PARTS : VAC HOSE		1	14
'B' VEHICLES	7		
PARTS :			
FORD MOTOR CO.			
'A' VEHICLES	7		
PARTS :			
'B' VEHICLES	7		
PARTS :			
CHRYSLER CORP.			
'A' VEHICLES	7		
PARTS :			
'B' VEHICLES	7		
PARTS :			

3.6 SUMMARY OF FEDERAL TEST PROCEDURE EMISSION FUEL ECONOMY AND HIGHWAY FUEL ECONOMY TEST RESULTS AT SUCCESSIVE STAGES OF MAINTENANCE

Data relating to FTP emission/fuel economy and HFET results at successive stages of the Restorative Maintenance Evaluation portion of the test plan are summarized in Table 7. A separate listing is furnished for each vehicle manufacturer. The following key is provided to facilitate the interpretation of these data:

TEST (Sequence) NO. 1 was conducted on the vehicle in its as-received condition.

TEST NO. 2 was conducted after vehicle maladjustments and disablements were conducted.

TEST NO. 3 was conducted on the vehicle found to have failed Federal standards based on results from the test that immediately preceded this test. Test No. 3 was immediately preceded by a repair of any malfunctioning emission component.

TABLE 7

SUMMARY OF EXHAUST EMISSION AND FUEL ECONOMY RESULTS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES

GENERAL MOTORS

TEST NUMBER	NO. OF VEHICLES	FEDERAL TEST PROCEDURE HC	CO	CO_2	NOxc	MPG	HFET MPG
TEST NO. 1	2	0.43	7.3	749.5	2.11	11.6	16.2
TEST NO. 2	2	0.48	7.4	750.6	1.78	11.6	15.7
% CHANGE		-12	-1	0	16	0	-4
TEST NO. 1	1	0.34	2.0	685.8	2.20	12.9	17.5
TEST NO. 3	1	0.28	4.0	685.0	2.22	12.8	17.6
% CHANGE		17	-96	0	-1	0	1
TEST NO. 2	0						
TEST NO. 3	0						
% CHANGE							

TABLE 7 CONT'D

SUMMARY OF EXHAUST EMISSION AND FUEL ECONOMY RESULTS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES

FORD

TEST NUMBER	NO. OF VEHICLES	FEDERAL TEST PROCEDURE HC	CO	CO_2	NOxc	MPG	HFET MPG
TEST NO. 1	6	1.30	25.9	675.8	2.28	12.3	16.3
TEST NO. 2	6	0.70	10.2	697.5	1.73	12.4	16.3
% CHANGE		46	61	-3	24	1	0
TEST NO. 1	0						
TEST NO. 3	0						
% CHANGE							
TEST NO. 2	2	0.89	19.3	719.9	1.35	11.8	15.2
TEST NO. 3	2	0.61	6.8	730.9	1.52	11.9	15.1
% CHANGE		31	65	-2	-13	1	0

TABLE 7 CONT'D

SUMMARY OF EXHAUST EMISSION AND FUEL ECONOMY RESULTS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES

CHRYSLER

TEST NUMBER	NO. OF VEHICLES	FEDERAL TEST PROCEDURE HC	CO	CO_2	NOxc	MPG	HFET MPG
TEST NO. 1	7	0.46	7.5	679.0	1.94	12.8	17.0
TEST NO. 2	7	0.48	8.8	712.6	0.96	12.2	15.9
% CHANGE		-3	-17	-5	51	-5	-7
TEST NO. 1	0						
TEST NO. 3	0						
% CHANGE							
TEST NO. 2	1	0.49	18.8	762.4	0.68	11.2	16.4
TEST NO. 3	1	0.45	16.7	752.3	0.71	11.4	16.9
% CHANGE		9	11	1	-4	2	3

TABLE 7 CONT'D

SUMMARY OF EXHAUST EMISSION AND FUEL ECONOMY RESULTS
AT SUCCESSIVE STAGES OF MAINTENANCE

DENVER
'A' VEHICLES

ALL VEHICLES

TEST NUMBER	NO. OF VEHICLES	FEDERAL TEST PROCEDURE HC	CO	CO_2	NOxc	MPG	HFET MPG
TEST NO. 1	15	0.79	14.8	687.1	2.10	12.4	16.6
TEST NO. 2	15	0.57	9.2	711.6	1.38	12.2	16.0
% CHANGE		29	38	-4	34	-2	-4
TEST NO. 1	1	0.34	2.0	685.8	2.20	12.9	17.5
TEST NO. 3	1	0.28	4.0	685.0	2.22	12.8	17.6
% CHANGE		17	-96	0	-1	0	1
TEST NO. 2	3	0.76	19.1	734.1	1.13	11.6	15.6
TEST NO. 3	3	0.56	10.1	738.0	1.25	11.7	15.7
% CHANGE		26	47	-1	-11	1	1

3.7 SUMMARY OF DRIVEABILITY EVALUATION RESULTS AT SUCCESSIVE STAGES OF MAINTENANCE

Data relating to the driveability evaluation results at successive stages of the Restorative Maintenance Evaluation portion of the test plan are summarized in Table 8, with individual vehicle results presented in Appendix H. A separate listing is furnished for each vehicle manufacturer. The following key is provided to facilitate the interpretation of these data:

TEST (Sequence) NO. 1 was conducted on the vehicle in its as-received condition.

TEST NO. 2 was conducted after vehicle maladjustments and disablements were conducted.

TEST NO. 3 was conducted on the vehicle found to have failed Federal standards based on results from the test that immediately preceded this test. Test No. 3 was immediately preceded by a repair of any malfunctioning emission component.

TABLE 8

SUMMARY OF DRIVEABILITY EVALUATION

DENVER

MANUFACTURER	CONSTANT SPEED NOS	A	C	P	AO	AF	ACCELERATION ¼	½	⅔	¾	RE-START CT	RIQ	COLD START CT	DAS	SGS	HA	IQ	DRIVE AWAY SP	A1	I1	SP	A2	I2
'A' VEHICLES																							
GENERAL MOTORS																							
TEST NO. 1	0	G	G	G	G	G	G	G	G	G	2	G	1	0	0	2	F	0	G	G	0	G	G
TEST NO. 2	0	G	G	E	E	E	E	E	E	E	2	E	1	0	0	1	F	0	G	G	0	G	G
TEST NO. 3	0	G	G	G	F	G	G	G	G	G	2	G	1	0	0	1	G	0	G	G	0	G	G
FORD																							
TEST NO. 1	0	G	G	G	G	G	G	G	G	G	2	G	2	0	0	2	F	0	F	F	0	F	G
TEST NO. 2	0	G	G	G	F	G	G	G	G	G	2	F	1	0	0	1	F	0	F	F	0	G	G
TEST NO. 3	0	G	G	G	F	G	G	G	G	G	2	G	1	0	0	1	F	0	F	G	0	G	G
CHRYSLER																							
TEST NO. 1	0	G	G	G	G	G	G	G	G	F	2	G	1	0	0	2	F	0	F	F	0	F	G
TEST NO. 2	0	F	F	F	F	G	F	F	F	F	3	G	1	0	0	2	F	0	F	F	0	F	F
TEST NO. 3	0	F	G	G	G	F	G	G	G	G	2	G	1	0	0	1	F	0	G	G	0	G	G
'B' VEHICLES																							
GENERAL MOTORS																							
TEST NO. 1	0	G	G	G	G	G	F	G	G	G	2	G	1	0	0	2	F	0	F	F	0	G	G
FORD																							
TEST NO. 1	0	G	G	G	G	G	G	G	G	G	3	G	1	0	0	1	F	0	F	G	0	G	G
TEST NO. 2	0	G	F	G	E	E	G	G	G	G	1	G	2	0	2	1	F	0	E	G	0	E	G
CHRYSLER																							
TEST NO. 1	0	F	F	G	F	F	F	F	F	F	1	F	2	0	0	2	F	0	F	F	0	F	G

4. SELECTIVE MALADJUSTMENTS AND DISABLEMENTS

Following completion of the Restorative Maintenance Evaluation Testing one vehicle (No. 7114) was selected to undergo testing in a Selective Maladjustment Program. These selected maladjustments and disablements represented what could be considered to be a prevalent of modification.

The first test of this sequence was performed with all adjustments and settings as specified by the manufacturer. This was followed by five tests, in each of which various parameters or components were singularly maladjusted or disabled. Parameter options that were evaluated in this five test loop were as follows:

EGR hose disconnected
Air pump deactivated
Choke 3 notches richer than spec.
5° timing advance from spec.
Rich best idle

Data relating to FTP emission/fuel economy and HFET results are summarized in Table 8. The following key is provided to facilitate the interpretation of these data:

BASE TEST represents the test results obtained with all adjustments at manufacturer's specifications.

Under BASE TEST are data relating to the listed maladjustment or disablment.

% CHANGE indicates the change from BASE TEST results to the maladjustment or disablement test result.

TABLE 9

SUMMARY OF PARAMETER MALADJUSTMENT
OR DISABLEMENT ON VEHICLE 7114

DENVER

TEST TYPE	NO. OF VEHICLES	--- FEDERAL TEST PROCEDURE -- HC	CO	NOxc	MPG	HFET MPG
BASE TEST	1	0.45	6.09	1.82	12.3	16.7
EGR DISABLED		0.49	5.93	5.48	12.3	16.0
% CHANGE		-8	3	-201	0	-4
BASE TEST	1	0.45	6.09	1.82	12.3	16.7
AIR PUMP DISABLED		3.18	70.30	2.01	12.3	16.6
% CHANGE		-608	-1055	-11	1	0
BASE TEST	1	0.45	6.09	1.82	12.3	16.7
CHOKE 3 N RICH		0.51	5.76	1.92	12.3	16.6
% CHANGE		-14	5	-5	0	-1
BASE TEST	1	0.45	6.09	1.82	12.3	16.7
TIMING + 5		0.65	9.51	2.32	12.4	17.0
% CHANGE		-44	-56	-27	1	1
BASE TEST	1	0.45	6.09	1.82	12.3	16.7
RICH BEST IDLE		1.24	38.80	1.25	11.2	
% CHANGE		-175	-538	31	-8	

5. APPENDICES

APPENDIX A - LISTING OF VEHICLE AND TEST PARAMETERS

Legend

VEH - Vehicle number

YEAR - Model year

MAKE - Vehicle make

MODL - Vehicle model

C - Number of cylinders

CID - Engine displacement in cubic inches

V - Number of carburetor venturis

T - Type of transmission (1: automatic; 4: 4-speed manual)

FT - Fuel tank capacity in gallons

A - Vehicle equipped with air conditioning? (1: yes; 2: no)

L - Was 10% RLHP added to simulate air conditioner? (1: yes; 2: no)

LEAD - Lead content of owners fuel in grams per gallon

RVP - Reid Vapor Pressure of test fuel

IRPM - Idle RPM, measured, as received from owner

IRPMS - Idle RPM, specified

IGN - Ignition timing in degrees, measured, as received from owner (+ indicates before top dead center; - indicates after top dead center; 000 indicates top dead center)

IGNS - Ignition timing in degrees, manufacturer's specification (+ indicates before top dead center; - indicates after top dead center; 000 indicates top dead center)

IHC - Exhaust hydrocarbon concentration with vehicle at normal idle in parts per million hexane equivalent, measured as received from owner

ICO - Exhaust carbon monoxide concentration with vehicle at normal idle in mole percent, measured as received from owner

ICOS - Exhaust carbon monoxide concentration specified by the manufacturer (9.99 indicates not specified)

INRT - Dynamometer inertia weight setting

RLHP - Road Load Horsepower setting

EGR - Exhaust Gas Recirculation present? (1: yes; 2: no)

CV - Catalytic converter present? (1: yes; 2: no)

P - PCV system operational? (1: yes; 2: no)

CS - Canister storage evaporative emission control present? (1: yes; 2: no)

CC - Crankcase storage evaporative emission control system present? (1: yes; 2: no)

AP - Air pump present? (1: yes; 2: no)

TP - Obvious disablement of emission control systems? (1: yes; 2: no)

FNA - Fuel tank filler neck altered? (1: yes; 2: no)

APPENDIX A

LISTING OF VEHICLES AND TEST PARAMETERS

DENVER

'A' VEHICLES

VEH	YEAR	MAKE	MODL	C	CID	V	T	FT	A	L	LEAD	RVP	IRPM	IRPMS	IGN	IGNS	IHC	ICO	ICOS	INRT	RLHP	EGR	CV	P	CS	CC	AP	TP	FNA
001	1977	PLYM	STAW	6	225	1	1	18	2	1	0.022	9.0	0750	0750	+09	+08	0	0.00	9.99	4000	13.2	1	1	1	1	2	1	1	2
002	1977	PLYM	VOLA	6	225	1	1	18	2	1	0.033	9.0	0750	0750	+08	+08	30	0.10	9.99	4000	13.2	1	1	1	1	2	2	2	2
003	1977	PLYM	STAW	8	318	2	1	20	1	1	0.045	9.0	0750	0850	+05	000	25	0.04	9.99	4500	14.0	1	1	1	1	2	1	1	2
004	1977	DODG	STAW	6	225	1	1	18	1	1	0.025	9.0	0970	0750	+16	+08	5	0.01	9.99	4000	13.2	1	1	1	1	2	1	1	2
005	1977	DODG	STAW	8	318	2	1	20	2	1	0.015	9.7	0935	0850	+05	000	22	0.05	9.99	4500	14.0	1	1	1	1	2	2	1	2
006	1977	DODG	CHAR	8	360	4	1	26	1	1	0.042	9.0	0850	0750	+13	+06	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	2	2
007	1977	CHRY	CORD	8	360	4	1	26	1	1	0.023	9.7	0790	0750	+06	+06	7	0.02	9.99	4500	14.0	1	1	1	1	2	1	2	2
008	1977	FORD	LTD	8	460	4	1	26	1	1	0.020	9.0	0650	0600	+24	+18	240	5.20	9.99	5000	14.7	1	1	1	1	2	1	2	2
009	1977	FORD	PINT	4	140	2	4	13	2	2	0.018	9.0	1400	0850	+06	+06	8	0.02	9.99	2750	9.9	1	1	1	1	2	1	2	2
010	1977	FORD	GRAN	8	302	2	1	19	1	1	0.015	9.0	0650	0650	+12	+12	10	0.02	9.99	4000	13.2	1	1	1	1	2	1	2	2
011	1977	FORD	LTD	8	351	2	1	26	1	1	0.039	9.0	0780	0650	+12	+12	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	2	2
012	1977	FORD	THND	8	400	2	1	26	1	1	0.016	9.0	0610	0650	+10	+10	340	7.20	9.99	5000	14.7	1	1	1	1	2	1	2	2
013	1977	MERC	MONA	8	302	2	1	19	1	1	0.019	9.0	0610	0650	+12	+12	9	0.00	9.99	4000	13.2	1	1	1	1	2	1	2	2
014	1977	MERC	COUG	8	351	2	1	26	1	1	0.014	9.0	0580	0650	+12	+12	290	1.80	9.99	4500	14.0	1	1	1	1	2	1	2	2
015	1977	BUIC	REGA	8	350	4	1	22	1	1	0.013	9.0	0560	0600	+10	+08	10	0.00	9.99	4500	10.8	1	1	1	1	2	1	2	2
016	1977	CADI	ELDO	8	425	4	1	28	1	1	0.025	9.0	0630	0600	+22	+18	0	0.00	9.99	5500	8.5	1	1	1	1	2	2	2	2
017	1977	CHEV	CAPR	8	350	4	1	20	1	1	0.021	9.0	0610	0600	+09	+08	0	0.00	9.99	4000	11.3	1	1	1	1	2	1	2	2
018	1977	CHEV	NOVA	8	350	4	1	18	1	1	0.019	9.0	0650	0600	+08	+08	2	0.00	9.99	4000	10.6	1	1	1	1	2	1	2	2
019	1977	CHEV	MALI	8	350	4	1	22	1	1	0.024	9.0	0600	0600	+09	+08	0	0.00	9.99	4500	10.8	1	1	1	1	2	1	2	2
020	1977	OLDS	CUTL	8	350	4	1	22	1	1	0.020	9.0	0515	0600	+20	+20	0	0.00	9.99	4500	10.8	1	1	1	1	2	2	2	2
021	1977	PONT	VENT	8	350	4	1	21	1	1	0.023	9.0	0635	0600	+08	+08	0	0.00	9.99	4000	10.6	1	1	1	1	2	1	2	2

'B' VEHICLES

VEH	YEAR	MAKE	MODL	C	CID	V	T	FT	A	L	LEAD	RVP	IRPM	IRPMS	IGN	IGNS	IHC	ICO	ICOS	INRT	RLHP	EGR	CV	P	CS	CC	AP	TP	FNA
101	1977	PLYM	STAW	6	225	1	1	20	2	1	0.040	9.0	0750	0750	+10	+08	0	0.00	9.99	4000	13.2	1	1	1	1	2	1	2	2
102	1977	PLYM	VOLA	6	225	1	1	18	1	1	0.031	9.0	0750	0750	+08	+08	15	0.03	9.99	4000	13.2	1	1	1	1	2	1	2	2
103	1977	PLYM	STAW	8	318	2	1	20	1	1	0.009	9.7	0850	0850	+06	000	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	2	2
104	1977	DODG	STAW	6	225	1	1	20	1	1	0.028	9.0	0750	0750	+19	+08	100	2.22	9.99	4000	13.2	1	1	1	1	2	1	2	2
105	1977	DODG	STAW	8	318	2	1	20	1	1	0.015	9.7	0925	0850	+02	000	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	1	2
106	1977	CHRY	CORD	8	360	4	1	26	1	1	0.015	9.0	0750	0750	+10	+06	50	0.55	9.99	4500	14.0	1	1	1	1	2	1	2	2
107	1977	CHRY	CORD	8	360	4	1	26	1	1	0.019	9.7	0750	0750	+13	+06	0	0.02	9.99	4500	14.0	1	1	1	1	2	1	2	2
108	1977	FORD	LTD	8	460	4	1	26	1	1	0.018	9.0	0710	0600	+18	+18	800	5.20	9.99	5000	14.7	1	1	1	1	2	1	2	2
109	1977	FORD	PINT	4	140	2	4	14	1	1	0.021	9.0	0820	0850	+02	+06	19	0.00	9.99	3000	11.3	1	1	1	1	2	1	2	2
110	1977	FORD	GRAN	8	302	2	1	19	2	1	0.016	9.0	0710	0650	+14	+12	20	0.00	9.99	4000	13.2	1	1	1	1	2	1	2	2
111	1977	FORD	THND	8	351	2	1	26	1	1	0.018	9.0	0650	0650	+12	+12	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	2	2
112	1977	FORD	THND	8	400	2	1	26	1	1	0.015	9.0	0550	0650	+10	+10	1440	10.00	9.99	5000	14.7	1	1	1	1	2	1	2	2
113	1977	MERC	MONA	8	302	2	1	19	1	1	0.020	9.0	0600	0650	+12	+12	21	0.00	9.99	4000	13.2	1	1	1	1	2	1	2	2
114	1977	MERC	COUG	8	351	2	1	26	1	1	0.027	9.0	0710	0650	+12	+12	0	0.00	9.99	4500	14.0	1	1	1	1	2	1	2	2
115	1977	BUIC	REGA	8	350	4	1	22	1	1	0.017	9.0	0600	0600	+08	+08	0	0.00	9.99	4500	10.8	1	1	1	1	2	1	2	2
116	1977	CADI	DEVI	8	425	4	1	24	1	1	0.013	9.0	0560	0600	+18	+18	400	4.60	9.99	4500	12.5	1	1	1	1	2	2	1	2
117	1977	CHEV	CAPR	8	350	4	1	20	1	1	0.033	9.0	0635	0600	+13	+08	250	0.15	9.99	4000	11.3	1	1	1	1	2	1	2	2
118	1977	CHEV	NOVA	8	350	4	1	18	1	1	0.023	9.0	0605	0600	+13	+08	0	0.00	9.99	4000	10.6	1	1	1	1	2	1	1	2
119	1977	CHEV	CHEL	8	350	4	1	22	1	1	0.028	9.0	0600	0600	+12	+08	0	0.00	9.99	4500	10.8	1	1	1	1	2	1	1	2
120	1977	OLDS	CUTL	8	350	4	1	22	1	1	0.010	9.0	0620	0600	+18	+20	40	0.70	9.99	4500	10.8	1	1	1	1	2	2	2	2
121	1977	PONT	GRNP	8	350	4	1	25	1	1	0.018	9.0	0625	0600	+17	+20	0	0.00	9.99	4500	10.7	1	1	1	1	2	2	2	2

APPENDIX B - LISTING OF TEST VEHICLE USE AND MAINTENANCE DATA

Legend

VEH - Vehicle number

YR - Model year

MAKE - Vehicle make

MODL - Vehicle model

VIN - Vehicle identification number

ODOM - True mileage

N - Purchased new or used (1: new; 2: used)

Y - Yearly vehicle miles traveled (1: 0-5,000; 2: 5,001-10,000; 3: 10,001-15,000; 4: 15,001-20,000; 5: 20,001-30,000; 6: over 30,000)

MD - Altered engine and/or exhaust components (1: yes; 2: no; 3: don't know)

C - Major city street driving (1: all; 2: most; 3: some; 4: little/none)

S - Rural road driving (1: all; 2: most; 3: some; 4: little/none)

E - Rural expressway driving (1: all; 2: most; 3: some; 4: little/none)

W - Driving to and from work (1: all; 2: most; 3: some; 4: little/none)

G - Shopping (1: all; 2: most; 3: some; 4: little/none)

B - Business not to and from work (1: all; 2: most; 3: some; 4: little/none)

V - Social, vacation, etc. (1: all; 2: most; 3: some; 4: little/none)

TD - Number of trips made on a typical day (one trip is defined as starting the engine, traveling some distance and stopping the engine)

WT - On a weekly basis, how often is full-throttle acceleration used? (1: seldom; 2: once or twice; 3: three-six times; 4: everyday)

U - Vehicle operated 50% of the time on unpaved roads, in competitive events, or in hauling or transporting loads heavier than for which it was designed. (1: yes; 2: no; 3: don't know)

H - Hard starting (1: yes; 2: no)

ST - Stalling (1: yes; 2: no)

R - Rough idle (1: yes; 2: no)

M - Engine misfiring (1: yes; 2: no)

A - Poor acceleration (1: yes; 2: no)

SB - Engine performance problem - stumbling (1: yes; 2: no)

DS - Engine performance problem - dieseling (1: yes; 2:no)

D - Has vehicle ever had major damage to: a) engine; b) cooling system; c) fuel tank; d) exhaust system; e) no damage. (1: yes; 2: no; 3: don't know)

LO - Date of last oil change (1: to new not due; 2: due but not yet done; 3: 0-6 mos; 4: 6-12 mos; 5: over 1 yr; 6: don't know)

LT - Last tune up (1: too new not due; 2: per mfrs. recommendation; 3: 0-6 mos; 4: 6-12 mos; 5: over 1 yr; 6: don't know)

MAR - Vehicle maintained to manufacturer's recommended specifications (1: yes; 2: no; 3: not sure; 4: don't know)

NW - Number of warranty repairs (1: no warranty; 2: never required; 3: once; 4: twice; 5: 3 or more; 6: don't know)

PP - Was vehicle returned for performance problems (1: no warranty; 2: never returned; 3: yes; 4: no)

UL - Unleaded fuel required (1: yes; 2: no)

L - Number of times leaded fuel was used (1: not required; 2: never; 3: seldom; 4: occasionally; 5: frequently; 6: don't know)

H_2 - Have you or others noticed a hydrogen sulfide (rotten eggs) odor in this vehicle's exhaust? (1: never; 2: rarely; 3: occasionally; 4: regularly; 5: don't know)

APPENDIX B

LISTING OF TEST VEHICLE USE AND MAINTENANCE DATA

DENVER

'A' VEHICLES

VEH	YR	MAKE	MODL	VIN	ODOM	N	Y	MD	C	S	E	W	G	B	V	TD	WT	U	H	ST	R	M	A	SB	DS	D	LO	LT	MAR	NW	PP	UL	L	H2
001	77	PLYM	STAW	HL45C7G139872	1444	1	2	2	2	4	4	2	3	4	3	4	1	2	1	1	1	2	1	2	1	22221	1	1	1	3	3	1	2	4
002	77	PLYM	VOLA	HL29C7B101830	2042	1	2	2	3	4	4	3	1	4	3	1	3	2	2	1	2	2	2	2	2	22221	1	1	1	4	3	1	2	1
003	77	PLYM	STAW	HH45G7G105644	536	1	3	2	3	4	4	4	2	4	3	4	1	2	2	2	1	2	2	2	2	22221	1	1	1	5	3	1	2	1
004	77	DODG	STAW	NH45C7G101413	1134	1	3	2	3	4	4	3	3	4	3	4	4	2	2	2	2	2	2	2	2	22221	1	1	1	3	3	1	2	1
005	77	DODG	STAW	NL45G7G123781	1721	1	2	2	4	4	4	2	3	4	4	2	4	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	1
006	77	DODG	CHAR	XS22J7R185036	2145	1	2	2	1	3	4	1	4	4	3	3	1	1	1	2	2	2	2	1	2	22221	1	1	1	2	2	1	2	1
007	77	CHRY	CORD	SS22J7R153672	448	1	2	2	3	4	4	4	2	4	3	2	1	2	2	2	2	2	2	2	2	22221	1	1	1	3	4	1	2	1
008	77	FORD	LTD	7J62A102595	2036	1	1	2	3	4	4	4	4	4	1	1	1	2	2	2	1	1	2	2	2	22221	1	1	1	5	3	1	2	3
009	77	FORD	PINT	7T11Y110996	2185	1	2	2	2	4	4	3	2	4	3	2	1	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	1
010	77	FORD	GRAN	7W84F141160	3484	1	2	2	3	4	3	2	3	4	3	4	1	2	2	2	2	2	2	2	2	22221	1	1	1	5	4	1	2	3
011	77	FORD	LTD	7H27H164300	2433	1	5	2	3	3	3	3	3	2	3	8	1	2	2	2	2	2	1	2	1	22221	1	1	1	2	2	1	2	4
012	77	FORD	THND	7J87S127290	2143	1	2	2	2	4	4	2	3	4	3	4	1	2	2	2	1	2	2	2	2	22221	3	1	1	2	2	1	2	4
013	77	MERC	MONA	7W34F516838	2813	1	2	2	2	4	4	4	2	4	3	2	1	2	1	2	2	2	1	2	2	22221	1	1	1	5	3	1	2	1
014	77	MERC	COUG	7A93H522975	2042	1	4	2	3	4	4	1	4	4	4	3	4	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	1
015	77	BUIC	REGA	4J57L7Z129310	3808	1	2	2	3	4	3	3	3	4	3	4	1	2	2	1	2	2	2	2	2	22221	1	1	1	4	4	1	2	2
016	77	CADI	ELDO	6L47S7Q244752	527	1	3	2	3	4	4	1	4	4	4	4	1	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	1
017	77	CHEV	CAPR	1N47L7C109312	1457	1	1	2	3	4	4	4	1	4	4	2	1	2	2	2	1	2	2	2	2	22221	1	1	1	2	2	1	2	1
018	77	CHEV	NOVA	1Y69L7L107517	2656	1	2	2	3	4	2	4	3	4	2	2	1	2	2	1	2	2	2	2	2	22221	3	1	1	5	4	1	2	3
019	77	CHEV	MALI	1C29L7K505235	950	1	6	2	4	4	1	4	4	1	4	4	1	2	1	2	2	2	2	1	2	22221	1	1	1	2	2	1	2	1
020	77	OLDS	CUTL	3M57R7R165432	1376	1	2	2	3	4	4	3	3	4	3	6	1	2	2	2	2	1	2	2	2	22221	1	1	1	2	2	1	2	1
021	77	PONT	VENT	2Z27L7L104881	3852	1	3	2	3	4	4	3	3	4	3	6	1	2	2	2	2	2	2	2	2	22221	3	1	1	4	4	1	2	1

'B' VEHICLES

VEH	YR	MAKE	MODL	VIN	ODOM	N	Y	MD	C	S	E	W	G	B	V	TD	WT	U	H	ST	R	M	A	SB	DS	D	LO	LT	MAR	NW	PP	UL	L	H2
101	77	PLYM	STAW	HL45C76116722	2973	1	2	2	3	4	4	4	3	4	2	1	2	2	2	2	1	2	2	2	2	22221	1	1	1	3	1	1	2	1
102	77	PLYM	VOLA	HL41C7F113296	2287	1	3	2	3	4	4	3	2	4	3	2	2	2	1	2	1	2	2	2	2	22221	1	1	1	4	4	1	2	1
103	77	PLYM	STAW	HH45G7G119594	1678	1	2	2	3	4	4	3	3	4	3	2	2	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	4
104	77	DODG	STAW	NH45C7B100862	2467	1	2	2	2	4	4	4	1	4	3	2	1	2	1	2	2	2	1	2	2	22221	3	1	1	5	4	1	2	1
105	77	DODG	STAW	NH45G7G121902	1304	1	2	2	2	4	4	3	4	2	4	4	2	2	2	2	1	2	2	2	2	22221	1	1	1	4	3	1	2	1
106	77	CHRY	CORD	3S22J7R136598	3381	1	3	2	3	4	4	3	3	4	3	2	1	2	2	1	2	2	2	2	2	22221	1	1	1	5	3	1	2	4
107	77	CHRY	CORD	3S22J7R172039	3558	1	3	2	2	4	4	4	2	4	3	2	2	2	2	2	1	2	2	2	2	22221	3	1	1	4	3	1	2	1
108	77	FORD	LTD	7P64A117979	2067	1	1	2	4	4	4	4	3	4	1	1	1	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	3
109	77	FORD	PINT	7R12Y107200	3592	1	3	2	3	4	4	2	3	4	4	3	4	2	2	2	1	2	2	2	2	22221	3	1	1	3	2	1	2	1
110	77	FORD	GRAN	7W81F124248	2671	1	2	2	1	4	4	3	2	4	3	2	3	2	2	2	2	2	2	2	2	22221	1	1	1	3	3	1	2	1
111	77	FORD	THND	7J87H116826	1941	1	2	2	3	4	3	4	2	4	3	2	1	2	2	2	2	2	2	2	2	22221	1	1	1	3	4	1	2	1
112	77	FORD	THND	7J87S116772	3708	1	3	2	2	4	4	2	4	3	4	3	1	2	1	2	2	2	1	2	1	22221	3	1	1	5	3	1	2	3
113	77	MERC	MONA	7W36F501535	3858	1	2	2	1	4	4	1	3	4	3	2	1	2	1	2	1	2	2	1	2	22221	3	1	1	2	2	1	2	1
114	77	MERC	COUG	7H91H518235	3603	1	3	3	3	4	3	3	3	3	3	4	1	3	2	2	2	2	2	2	2	22222	1	1	4	2	2	1	6	5
115	77	BUIC	REGA	4J57L7Z119381	1992	1	2	2	3	4	4	3	3	4	3	3	1	2	2	2	2	2	2	2	2	22221	3	1	1	3	4	1	2	5
116	77	CADI	DEVI	6D47S7Q168585	4317	1	3	2	3	4	3	4	2	4	3	4	1	2	2	2	2	2	2	2	2	22221	1	1	1	2	2	1	2	1
117	77	CHEV	CAPR	1N69L7C113540	2340	1	2	2	3	4	4	4	1	4	4	2	1	2	2	2	2	2	2	2	2	22221	1	1	1	3	4	1	2	2
118	77	CHEV	NOVA	1Y69L7K116801	2678	1	2	2	3	4	2	4	3	4	2	3	1	2	2	2	2	2	2	2	2	22221	3	1	1	2	2	1	2	1
119	77	CHEV	CHEL	1D29L7Z430982	2290	1	3	2	3	4	4	3	3	4	3	15	2	2	2	1	2	2	2	2	2	22221	1	1	1	2	2	1	2	2
120	77	OLDS	CUTL	3M57R7R185415	1621	1	3	2	3	4	3	3	3	4	3	3	1	2	2	2	2	2	2	2	2	22221	1	1	1	3	4	1	2	3
121	77	PONT	GRNP	2J57R7P215339	2037	1	2	2	1	4	4	1	4	4	4	2	1	2	2	2	2	2	1	2	2	22221	1	1	1	3	3	1	2	1

APPENDIX C - LISTING OF DISABLEMENT/MALADJUSTMENT OCCURANCES

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

IND SYS - Induction system

CRB SYS - Carburetor and fuel system

IGN SYS - Ignition system

EGR SYS - E.G.R. system

AIR PMP - Air pump system

PCV SYS - P.C.V. system

EXH SYS - Exhaust system

EVP CTL - Evaporative control system

INT ENG - Internal engine and misc. components

D/M - Did component pass or fail disablement and maladjustment inspection? (P: pass; F: fail; -: not applicable)

ACT - Action taken (ADJ: adjust or reconnect, no parts damaged, altered, or missing; RPR: repair, item present but damaged or altered slightly; RPL: replace, item missing or severely damaged - replacement necessary)

APPENDIX C

LISTING OF DISABLEMENT / MALADJUSTMENT OCCURANCES

DENVER

CHRYSLER

'A' VEHICLES

VEH	MAKE	MODL	IND D/M	IND SYS ACT	CRB D/M	CRB SYS ACT	IGN D/M	IGN SYS ACT	EGR D/M	EGR SYS ACT	AIR D/M	AIR PMP ACT	PCV D/M	PCV SYS ACT	EXH D/M	EXH SYS ACT	EVP D/M	CTL ACT	INT D/M	ENG ACT
001	PLYM	STAW	P		F		P		P		P		P		P		P		P	
002	PLYM	VOLA	P		P		P		P		P		P		P		P		P	
003	PLYM	STAW	F.	ADJ	F		F	ADJ	F	RPR	P		P		P		P		P	
004	DODG	STAW	P		F		F	ADJ	P		P		P		P		P		P	
005	DODG	STAW	P		F		F	ADJ	P		P		P		P		P		P	
006	DODG	CHAR	P		P		F	ADJ	F	RPR	P		P		P		P		P	
007	CHRY	CORD	P		P		P		P		P		P		P		P		P	

'B' VEHICLES

VEH	MAKE	MODL	IND D/M	IND SYS ACT	CRB D/M	CRB SYS ACT	IGN D/M	IGN SYS ACT	EGR D/M	EGR SYS ACT	AIR D/M	AIR PMP ACT	PCV D/M	PCV SYS ACT	EXH D/M	EXH SYS ACT	EVP D/M	CTL ACT	INT D/M	ENG ACT
101	PLYM	STAW	P		P		P		P		P		P		P		P		P	
102	PLYM	VOLA	P		F		P		P		P		P		P		P		P	
103	PLYM	STAW	P		F		F		P		P		P		P		P		P	
104	DODG	STAW	P		P		F		P		P		P		P		P		P	
105	DODG	STAW	F		F		P		P		P		P		P		P		P	
106	CHRY	CORD	P		F		P		P		P		P		P		P		P	
107	CHRY	CORD	P		F		F		P		P		P		P		P		P	

APPENDIX C CONT'D

LISTING OF DISABLEMENT / MALADJUSTMENT OCCURANCES

DENVER

FORD

'A' VEHICLES

VEH	MAKE	MODL	IND D/M	IND SYS ACT	CRB D/M	CRB SYS ACT	IGN D/M	IGN SYS ACT	EGR D/M	EGR SYS ACT	AIR D/M	AIR PMP ACT	PCV D/M	PCV SYS ACT	EXH D/M	EXH SYS ACT	EVP D/M	EVP CTL ACT	INT D/M	INT ENG ACT
008	FORD	LTD	P		F		F	ADJ	F	RPR	P		P		P		P		P	
009	FORD	PINT	P		P		P		P		P		P		P		P		P	
010	FORD	GRAN	P		F		P		P		P		P		P		P		P	
011	FORD	LTD	P		P		P		P		P		P		P		P		P	
012	FORD	THND	F	ADJ	F	ADJ	P		P		P		P		P		P		P	
013	MERC	MONA	P		P		P		P		P		P		P		P		P	
014	MERC	COUG	P		F	ADJ	P		P		P		P		P		P		P	

'B' VEHICLES

VEH	MAKE	MODL	IND D/M	IND SYS ACT	CRB D/M	CRB SYS ACT	IGN D/M	IGN SYS ACT	EGR D/M	EGR SYS ACT	AIR D/M	AIR PMP ACT	PCV D/M	PCV SYS ACT	EXH D/M	EXH SYS ACT	EVP D/M	EVP CTL ACT	INT D/M	INT ENG ACT
108	FORD	LTD	P		F		P		P		P		P		P		P		P	
109	FORD	PINT	P		F		P		P		P		P		P		P		P	
110	FORD	GRAN	P		F		P		P		P		P		P		P		P	
111	FORD	THND	P		P		P		F	RPR	P		P		P		P		P	
112	FORD	THND	P		F		P		P		P		P		P		P		P	
113	MERC	MONA	P		F		P		P		P		P		P		P		P	
114	MERC	COUG	P		F		P		P		P		P		P		P		P	

APPENDIX C CONT'D

LISTING OF DISABLEMENT / MALADJUSTMENT OCCURANCES

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH	MAKE	MODL	IND SYS D/M	IND SYS ACT	CRB SYS D/M	CRB SYS ACT	IGN SYS D/M	IGN SYS ACT	EGR SYS D/M	EGR SYS ACT	AIR PMP D/M	AIR PMP ACT	PCV SYS D/M	PCV SYS ACT	EXH SYS D/M	EXH SYS ACT	EVP CTL D/M	EVP CTL ACT	INT ENG D/M	INT ENG ACT
015	BUIC	REGA	P		F	ADJ	P		P		P		P		P		P		-	
016	CADI	ELDO	P		P		F	ADJ	P		-		P		P		P		P	
017	CHEV	CAPR	P		P		P		P		P		P		P		P		P	
018	CHEV	NOVA	P		P		P		P		P		P		P		P		P	
019	CHEV	MALI	P		P		P		P		P		P		P		P		P	
020	OLDS	CUTL	P		P		P		P		-		P		P		P		P	
021	PONT	VENT	P		P		P		P		P		P		P		P		P	

'B' VEHICLES

VEH	MAKE	MODL	IND SYS D/M	IND SYS ACT	CRB SYS D/M	CRB SYS ACT	IGN SYS D/M	IGN SYS ACT	EGR SYS D/M	EGR SYS ACT	AIR PMP D/M	AIR PMP ACT	PCV SYS D/M	PCV SYS ACT	EXH SYS D/M	EXH SYS ACT	EVP CTL D/M	EVP CTL ACT	INT ENG D/M	INT ENG ACT
115	BUIC	REGA	P		P		P		P		P		P		P		P		P	
116	CADI	DEVI	P		F		P		P		-		P		P		P		P	
117	CHEV	CAPR	P		P		F		P		P		P		P		P		P	
118	CHEV	NOVA	P		F		F		P		P		P		P		P		P	
119	CHEV	CHEL	P		F		F		P		P		P		P		P		-	
120	OLDS	CUTL	P		P		F		P		-		P		P		P		-	
121	PONT	GRNP	P		F		F		P		-		P		P		P		-	

APPENDIX D - LISTING OF EMISSION COMPONENT FUNCTION CHECK - CHRYSLER

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

PC - P.C.V. (P: pass)

EC - Evaporative control system (P: pass)

HD - Heated air inlet diaphragm (P: pass)

DR - Heated air inlet door (P: pass)

ES - Electrically assisted choke switch (P: pass; N: not applicable)

CH - Electrically assisted choke heater (P: pass)

CI - C.C.I.E. switch (P:pass; N: not applicable)

CE - C.C.E.G.R. switch (P: pass)

DS - Idle enrichment delay solenoid (N: not applicable)

ID - Idle enrichment diaphragm (P: pass; N: not applicable)

OS - O.S.A.C. valve (P: pass)

EV - E.G.R. valve (P: pass)

TD - E.G.R. time delay solenoid (P: pass)

VA - Vacuum control amplifier (P: pass; N: not applicable)

TC - T.I.C. valve (P: pass; N: not applicable)

AP - Air pump (P: pass)

TS - Throttle stop solenoid (P: pass; N: not applicable)

CP - Catalyst protect system speed switch (P: pass; N: not applicable)

DP - Dashpot (N: not applicable)

CK - Choke kickdown diaphragm (P: pass)

SP - Spark plugs and cables, cap and rotor (P: pass)

VU - Vacuum advance unit (P: pass)

AS - Other (N: not applicable)

01 - Other (P: pass; N: not applicable)

APPENDIX D

LISTING OF EMISSION COMPONENT FUNCTION CHECK

DENVER

CHRYSLER

'A' VEHICLES

VEH	MAKE	MODL	PC	EC	HD	DR	ES	CH	CI	CE	DS	ID	OS	EV	TD	VA	TC	AP	TS	CP	DP	CK	SP	VU	AS	O1
001	PLYM	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	N
002	PLYM	VOLA	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	N
003	PLYM	STAW	P	P	P	P	P	P	P	P	N	N	P	P	P	P	P	P	P	N	N	P	P	P	N	N
004	DODG	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	N
005	DODG	STAW	P	P	P	P	P	P	P	P	N	P	P	P	P	P	N	P	P	N	N	P	P	P	N	P
006	DODG	CHAR	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	N
007	CHRY	CORD	P	P	P	P	P	P	N	P	N	P	P	P	P	P	N	P	N	P	N	P	P	P	N	P

'B' VEHICLES

VEH	MAKE	MODL	PC	EC	HD	DR	ES	CH	CI	CE	DS	ID	OS	EV	TD	VA	TC	AP	TS	CP	DP	CK	SP	VU	AS	O1
101	PLYM	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	P
102	PLYM	VOLA	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	P
103	PLYM	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	P	N	N	P	P	P	N	N
104	DODG	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	N	N	N	P	P	P	N	P
105	DODG	STAW	P	P	P	P	P	P	N	P	N	N	P	P	P	P	N	P	P	N	N	P	P	P	N	N
106	CHRY	CORD	P	P	P	P	N	P	P	P	N	N	P	P	P	N	N	P	N	N	N	P	P	P	N	N
107	CHRY	CORD	P	P	P	P	P	P	N	P	N	P	P	P	P	P	N	P	N	N	N	P	P	P	N	N

APPENDIX D CONT'D - LISTING OF EMISSION COMPONENT FUNCTION CHECK - FORD

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

EH - Exhaust heat control valve (P: pass; N: not applicable)

PC - P.C.V. system (P: pass)

EV - E.G.R. valve (P: pass)

EP - E.G.R. P.V.S. (P: pass; N: not applicable)

HM - High speed modulator (P: pass; N: not applicable)

VV - Venturi vacuum amplifier (N: not applicable)

VR - Vacuum reservoir, vacuum reservoir check valve (N: not applicable)

TP - Thermactor air pump (P: pass)

BV - By-pass valve (P: pass)

TV - Thermactor check valves (P: pass; N: not applicable)

VC - Vacuum diff. control (P: pass; N: not applicable)

PE - Electric P.V.S. (N: not applicable)

SV - Solenoid vacuum valve (N: not applicable)

FS - Floor pan thermal switch (N: not applicable)

FD - Fuel deceleration valve diaphragm (N: not applicable)

FT - Fuel deceleration valve time rate (N: not applicable)

FI - Fuel decel transmission interlock (N: not applicable)

PI - P.V.S. fuel decel interlock (N: not applicable)

SM - Speed modulated decel (N: not applicable)

SD - Spark delay valves (N: not applicable)

SS - Spark control system distributor P.V.S. (P: pass; N: not applicable)

CS - Cold start P.V.S. (P: pass; N: not applicable)

CV - Vacuum check valve (P: pass; N: not applicable)

SR - Spark retard delay valve (P: pass; N: not applicable)

DD - Distributor diaphragm (P: pass)

PT - Throttle positioning solenoid (P: pass; N: not applicable)

CE - Electric choke (P: pass)

CD - Choke pull-off diaphragm (P: pass; N: not applicable)

AM - Air cleaner vacuum motor (P: pass)

AT - Air cleaner temperature control, duct valve (P: pass)

CW - Cold weather modulator (N: not applicable)

CA - Cold temp. actuated vacuum system (N: not applicable)

AD - Air cleaner delay valve (P: pass; N: not applicable)

SP - Spark plugs and wires (P: pass)

EB - Exhaust backpressure transducer (P: pass; N: not applicable)

01 - Other (N: not applicable)

APPENDIX D CONT'D

LISTING OF EMISSION COMPONENT FUNCTION CHECK

DENVER

FORD

'A' VEHICLES

VEH	MAKE	MODL	EH	PC	EV	EP	HM	VV	VR	TP	BV	TV	VC	PE	SV	FS	FD	FT	FI	PI
008	FORD	LTD	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
009	FORD	PINT	N	P	P	N	P	N	N	P	P	P	P	N	N	N	N	N	N	N
010	FORD	GRAN	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
011	FORD	LTD	P	P	P	P	N	N	N	P	P	P	P	N	N	N	N	N	N	N
012	FORD	THND	N	P	P	P	N	N	N	P	P	P	N	N	N	N	N	N	N	N
013	MERC	MONA	N	P	P	P	N	N	N	P	P	P	N	N	N	N	N	N	N	N
014	MERC	COUG	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N

'B' VEHICLES

VEH	MAKE	MODL	EH	PC	EV	EP	HM	VV	VR	TP	BV	TV	VC	PE	SV	FS	FD	FT	FI	PI
108	FORD	LTD	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
109	FORD	PINT	N	P	P	N	P	N	N	P	P	P	P	N	N	N	N	N	N	N
110	FORD	GRAN	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
111	FORD	THND	P	P	P	P	N	N	N	P	P	P	P	N	N	N	N	N	N	N
112	FORD	THND	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
113	MERC	MONA	N	P	P	P	P	N	N	P	P	P	P	N	N	N	N	N	N	N
114	MERC	COUG	N	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	N	N

APPENDIX D CONT'D

LISTING OF EMISSION COMPONENT FUNCTION CHECK

DENVER

FORD

'A' VEHICLES

VEH	MAKE	MODL	SM	SD	SS	CS	CV	SR	DD	PT	CE	CD	AM	AT	CW	CA	AD	SP	EB	O1
008	FORD	LTD	N	N	N	N	N	N	P	P	P	P	P	P	N	N	P	P	P	N
009	FORD	PINT	N	N	N	N	N	N	P	P	P	N	P	P	N	N	N	P	N	N
010	FORD	GRAN	N	N	P	P	N	N	P	P	P	P	P	P	N	N	N	P	P	N
011	FORD	LTD	N	N	P	N	N	P	P	N	P	P	P	P	N	N	P	P	N	N
012	FORD	THND	N	N	P	P	P	N	P	N	P	P	P	P	N	N	P	P	P	N
013	MERC	MONA	N	N	P	P	N	N	P	P	P	P	P	P	N	N	N	P	P	N
014	MERC	COUG	N	N	P	P	N	N	P	N	P	P	P	P	N	N	P	P	P	N

'B' VEHICLES

VEH	MAKE	MODL	SM	SD	SS	CS	CV	SR	DD	PT	CE	CD	AM	AT	CW	CA	AD	SP	EB	O1
108	FORD	LTD	N	N	N	N	N	N	P	P	P	P	P	P	N	N	P	P	P	N
109	FORD	PINT	N	N	N	N	N	N	P	P	P	N	P	P	N	N	N	P	N	N
110	FORD	GRAN	N	N	P	P	N	N	P	P	P	P	P	P	N	N	N	P	P	N
111	FORD	THND	N	N	N	N	N	N	P	N	P	P	P	P	N	N	P	P	P	N
112	FORD	THND	N	N	N	P	P	N	P	N	P	P	P	P	N	N	P	P	P	N
113	MERC	MONA	N	N	P	P	N	N	P	P	P	P	P	P	N	N	N	P	P	N
114	MERC	COUG	N	N	N	N	N	N	P	N	P	P	P	P	N	N	P	P	P	N

APPENDIX D CONT'D - LISTING OF EMISSION
COMPONENT FUNCTION CHECK - GENERAL MOTORS

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

PC - P.C.V. (P: pass)

HA - Heated air inlet (P: pass)

EF - E.F.E. (P: pass; N: not applicable)

ET - E.F.E. TVV (P: pass; N: not applicable)

FC - E.F.E. check valve (P: pass; N: not applicable)

EV - E.G.R. valve (P: pass)

TE - E.G.R. TCV (P: pass)

SC - E.G.R. snap disc control valve (N: not applicable)

EB - E.G.R. back pressure transducer (N: not applicable)

VE - E.G.R. TVV (P: pass; N: not applicable)

AR - Air injection reactor (P: pass; N: not applicable)

FA - Full vacuum advance system (P: pass; N: not applicable)

PA - Ported vacuum advance system (P: pass; N: not applicable)

DD - Distributor advance diaphragm (P: pass)

DV - Vacuum spark delay valve or restrictor (N: not applicable)

AV - Vacuum advance TVV (N: not applicable)

AS - Vacuum advance TVS (P: pass; N: not applicable)

VM - Vacuum advance modulator valve (P: pass; N: not applicable)

IS - Idle stop solenoid (N: not applicable)

VB - Vacuum break, primary (P: pass)

VS - Vacuum break, secondary (P: pass; N: not applicable)

CE - Electric choke (P: pass; N: not applicable)

SP - Spark plugs, wires (P: pass)

O1 - Other (P: pass; N: not applicable; F3: fail/replace)

APPENDIX D CONT'D

LISTING OF EMISSION COMPONENT FUNCTION CHECK

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH	MAKE	MODL	PC	HA	EF	ET	FC	EV	TE	SC	EB	VE	AR	FA	PA	DD	DV	AV	AS	VM	IS	VB	VS	CE	SP	01
015	BUIC	REGA	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
016	CADI	ELDO	P	P	P	P	N	P	P	N	N	P	N	P	N	P	N	N	N	N	N	P	P	P	P	N
017	CHEV	CAPR	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	F3
018	CHEV	NOVA	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
019	CHEV	MALI	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
020	OLDS	CUTL	P	P	N	N	N	P	P	N	N	N	N	N	P	P	N	N	P	N	N	P	P	N	P	P
021	PONT	VENT	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N

'B' VEHICLES

VEH	MAKE	MODL	PC	HA	EF	ET	FC	EV	TE	SC	EB	VE	AR	FA	PA	DD	DV	AV	AS	VM	IS	VB	VS	CE	SP	01
115	BUIC	REGA	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
116	CADI	DEVI	P	P	P	P	N	P	P	N	N	P	N	P	N	P	N	N	N	N	N	P	P	P	P	N
117	CHEV	CAPR	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
118	CHEV	NOVA	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
119	CHEV	CHEL	P	P	P	P	P	P	P	N	N	N	P	P	N	P	N	N	N	N	N	P	N	N	P	N
120	OLDS	CUTL	P	P	N	N	N	P	P	N	N	N	N	N	P	P	N	N	P	N	N	P	P	N	P	P
121	PONT	GRNP	P	P	N	N	N	P	P	N	N	N	N	N	P	P	N	N	P	N	N	P	P	N	P	P

APPENDIX E - LISTING OF IDLE INSPECTION AND ADJUSTMENTS - CHRYSLER

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CYL - Number of cylinders

IQ - Idle quality before adjustment (E: excellent; F: fair; P: poor)

IRPM - Idle RPM measured before adjustment

IRPMS - Idle RPM specified by manufacturer

IRPMA - Idle RPM adjustment required (Y: yes; N: no; -: not applicable)

EISM - Enriched idle RPM measured

EISS - Enriched idle RPM specified

IAR - Idle mixture adjustment required (Y: yes; N: no; -: not applicable)

N4TR - Number of 1/4 turns of right mixture screw required to achieve smooth idle at the specified curb idle speed

N4TL - Number of 1/4 turns of left mixture screw required to achieve smooth idle at the specified curb idle speed

LC - Was adjustment within range allowed by limiter caps (Y: yes; N: no; M: caps missing or not functional; -: no applicable)

FIQ - Final idle quality as compared to quality before adjustment (MB: much better; SB: slightly better; ND: no noticeable difference; SW: slightly worse; MW: much worse)

APPENDIX E

LISTING OF IDLE INSPECTION AND ADJUSTMENTS

DENVER

CHRYSLER

'A' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	IRPMS	IRPMA	EISM	EISS	IAR	N4TR	N4TL	LC	FIQ
001	PLYM	STAW	225	6	F	750	750	N	580	850	Y	0	5	M	SB
002	PLYM	VOLA	225	6	E	750	750	N	800	850	Y	0	1	Y	SW
003	PLYM	STAW	318	8	E	750	850	N	730	930	Y	4	4	M	ND
004	DODG	STAW	225	6	F	970	750	Y	600	850	Y	0	1	M	SB
005	DODG	STAW	318	8	E	870	850	N	910	930	N	0	0	M	ND
006	DODG	CHAR	360	8	E	700	750	N	800	850	Y	1	1	Y	SW
007	CHRY	CORD	360	8	F	790	750	N	750	850	Y	4	4	N	SW

'B' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	IRPMS	IRPMA	EISM	EISS	IAR	N4TR	N4TL	LC	FIQ
101	PLYM	STAW	225	6	E	750	750	-	640	850	-	0	0	-	ND
102	PLYM	VOLA	225	6	E	750	750	-	630	850	-	0	0	-	ND
103	PLYM	STAW	318	8	E	930	850	-	870	930	-	0	0	-	ND
104	DODG	STAW	225	6	E	750	750	-	690	850	-	0	0	-	ND
105	DODG	STAW	318	8	F	925	850	-	600	930	-	0	0	-	ND
106	CHRY	CORD	360	8	E	750	750	-	750	820	-	0	0	-	ND
107	CHRY	CORD	360	8	F	750	750	-	750	850	-	0	0	-	ND

APPENDIX E CONT'D - LISTING OF IDLE INSPECTION AND ADJUSTMENTS - FORD

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CYL - Number of cylinders

IQ - Idle quality before adjustment (E: excellent; F: fair; P: poor)

IRPM - Idle RPM measured before adjustment

IRPMS - Idle RPM specified by manufacturer

IRPMA - Idle RPM measured after adjustment (O: not adjusted)

ARSI - Allowable range of idle speed increase with propane enrichment in RPM

ISI - Measured idle speed increase with propane enrichment before adjustment in RPM

FIS - Final idle speed in RPM (O: not adjusted)

RRANGE - Specified reset range for idle speed increase in RPM (O: not adjusted)

FIS - Final idle speed increase in RPM

N4T - Number of 1/4 turns of mixture screws to achieve idle CO setting

LC - Was adjustment within range allowed by limiter caps (Y: yes; N: no; M: caps missing or not functional; -: not adjusted)

FIQ - Final idle quality as compared to quality before adjustment (MB: much better; SB: slightly better; ND: no noticeable difference; SW: slightly worse; NW: much worse)

APPENDIX E CONT'D

LISTING OF IDLE INSPECTION AND ADJUSTMENTS

DENVER

FORD

'A' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	IRPMS	IRPMA	ARSI	ISI	FIS	RRANGE	FSI	N4T	LC	FIQ
008	FORD	LTD	460	8	E	620	600	0	75 - 125	0	600	80 - 120	120	5	M	ND
009	FORD	PINT	140	4	F	1400	850	850	10 - 30	20	850	0 - 10	0	0	M	ND
010	FORD	GRAN	302	8	E	650	650	0	220 - 280	20	650	240 - 260	255	4	Y	SW
011	FORD	LTD	351	8	F	650	650	0	30 - 60	10	650	40 - 50	40	2	N	ND
012	FORD	THND	400	8	F	610	650	0	90 - 130	0	650	100 - 120	110	6	M	SW
013	MERC	MONA	302	8	E	610	650	0	220 - 280	10	650	240 - 260	240	6	Y	SW
014	MERC	COUG	351	8	E	560	650	0	30 - 60	5	650	40 - 50	45	2	M	ND

'B' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	IRPMS	IRPMA	ARSI	ISI	FIS	RRANGE	FSI	N4T	LC	FIQ
108	FORD	LTD	460	8	E	710	600	0	75 - 125	0	0	0 - 0	0	0	-	ND
109	FORD	PINT	140	4	F	820	850	0	10 - 30	0	0	0 - 0	0	0	-	ND
110	FORD	GRAN	302	8	E	710	650	0	220 - 280	0	0	0 - 0	0	0	-	ND
111	FORD	THND	351	8	F	650	650	0	30 - 60	60	0	0 - 0	0	0	-	ND
112	FORD	THND	400	8	F	550	650	0	90 - 130	0	0	0 - 0	0	0	-	ND
113	MERC	MONA	302	8	F	600	650	0	220 - 280	170	0	0 - 0	0	0	-	ND
114	MERC	COUG	351	8	F	710	650	0	30 - 60	85	650	40 - 50	40	3	N	SB

APPENDIX E CONT'D - LISTING OF IDLE INSPECTION
AND ADJUSTMENTS - GENERAL MOTORS

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

CID - Engine displacement in cubic inches

CYL - Number of cylinders

IQ - Idle quality before adjustment (E: excellent; F: fair; P: poor)

IRPM - Idle RPM measured before adjustment

N4TR - Number of 1/4 turns to lightly seat right idle mixture screw

N4TL - Number of 1/4 turns to lightly seat left idle mixture screw

LDIS - Specified "before lean drop idle" speed

FIS - Specified final idle speed

N4TD - Number of 1/4 turns of each screw to achieve lean drop

AN4TR - Final number of 1/4 turns of right idle mixture screw from the lightly seated position to achieve the specified final idle speed

AN4TL - Final number of 1/4 turns of left idle mixture screw from the lightly seated position to achieve the specified final idle speed

FIQ - Final idle quality as compared to quality before adjustment (MB: much better; SB: slightly better; ND: no noticeable difference; SW: slightly worse; MW: much worse)

APPENDIX E CONT'D

LISTING OF IDLE INSPECTION AND ADJUSTMENTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	N4TR	N4TL	LDIS	FIS	N4TD	AN4TR	AN4TL	FIQ
015	BUIC	REGA	350	8	F	560	0	0	560	600	0	0	0	ND
016	CADI	ELDO	425	8	F	630	0	0	675	600	0	0	0	ND
017	CHEV	CAPR	350	8	P	610	0	0	650	600	0	0	0	ND
018	CHEV	NOVA	350	8	F	650	0	0	650	600	0	0	0	ND
019	CHEV	MALI	350	8	E	540	0	0	650	600	0	0	0	ND
020	OLDS	CUTL	350	8	F	515	0	0	625	600	0	0	0	ND
021	PONT	VENT	350	8	E	635	0	0	635	600	0	0	0	ND

'B' VEHICLES

VEH	MAKE	MODL	CID	CYL	IQ	IRPM	N4TR	N4TL	LDIS	FIS	N4TD	AN4TR	AN4TL	FIQ
115	BUIC	REGA	350	8	F	600	0	0	650	600	0	0	0	ND
116	CADI	DEVI	425	8	F	560	11	9	670	600	7	5	5	SW
117	CHEV	CAPR	350	8	F	635	0	0	650	600	0	0	0	ND
118	CHEV	NOVA	350	8	E	605	14	6	650	600	3	3	3	SW
119	CHEV	CHEL	350	8	F	600	9	8	650	600	3	8	8	ND
120	OLDS	CUTL	350	8	F	620	0	0	620	620	0	0	0	ND
121	PONT	GRNP	350	8	F	625	0	0	625	600	0	0	0	ND

APPENDIX F - SUMMARY OF VEHICLE RESTORATIVE MAINTENANCE COSTS ON INDIVIDUAL VEHICLES

Legend

VEH. NO. - Vehicle number

MODL - Vehicle model

DISABLEMENT/MALADJUST - Lists cost associated with tampering inspection and correction

EMISSION COMPONENTS - Lists cost associated with emission component function check and correction

IDLE SET - Listing of cost associated with idle CO and RPM inspection and adjustment

TOTAL LABOR - Cost of labor for above inspections, adjustments, and repairs at $15.00 per hour

TOTAL PARTS - Cost of parts used in above repairs

TOTAL COST - Sum of TOTAL LABOR and TOTAL PARTS

APPENDIX F

SUMMARY OF VEHICLE RESTORATIVE MAINTENANCE COSTS
ON INDIVDUAL VEHICLES

DENVER

'A' VEHICLES

VEH. NO.	MODL	DISABLEMENT/MALADJUST INSP. LABOR	DISABLEMENT/MALADJUST CORRECTION LABOR	DISABLEMENT/MALADJUST CORRECTION PARTS	EMISSION COMPONENTS INSP. LABOR	EMISSION COMPONENTS CORRECTION LABOR	EMISSION COMPONENTS CORRECTION PARTS	IDLE SET LABOR	TOTAL LABOR	TOTAL PARTS	TOTAL COST
001	STAW	$3.00	$0.00	$0.00	$15.00	$0.00	$0.00	$3.00	$21.00	$0.00	$21.00
002	VOLA	$7.50	$0.00	$0.00	$12.00	$0.00	$0.00	$6.00	$25.50	$0.00	$25.50
003	STAW	$16.50	$9.00	$0.00	$15.00	$0.00	$0.00	$7.50	$48.00	$0.00	$48.00
004	STAW	$7.50	$0.00	$0.00	$15.00	$0.00	$0.00	$3.00	$25.50	$0.00	$25.50
005	STAW	$7.50	$3.00	$0.00	$15.00	$0.00	$0.00	$4.50	$30.00	$0.00	$30.00
006	CHAR	$10.50	$4.50	$0.00	$15.00	$0.00	$0.00	$7.50	$37.50	$0.00	$37.50
007	CORD	$4.50	$0.00	$0.00	$15.00	$0.00	$0.00	$1.50	$21.00	$0.00	$21.00
008	LTD	$7.50	$4.50	$0.00	$15.00	$0.00	$0.00	$7.50	$34.50	$0.00	$34.50
009	PINT	$7.50	$0.00	$0.00	$12.00	$0.00	$0.00	$4.50	$24.00	$0.00	$24.00
010	GRAN	$9.00	$0.00	$0.00	$18.00	$0.00	$0.00	$7.50	$34.50	$0.00	$34.50
011	LTD	$9.00	$0.00	$0.00	$15.00	$0.00	$0.00	$7.50	$31.50	$0.00	$31.50
012	THND	$12.00	$1.50	$0.00	$15.00	$0.00	$0.00	$7.50	$36.00	$0.00	$36.00
013	MONA	$6.00	$0.00	$0.00	$15.00	$0.00	$0.00	$9.00	$30.00	$0.00	$30.00
014	COUG	$7.50	$1.50	$0.00	$16.50	$0.00	$0.00	$6.00	$31.50	$0.00	$31.50
015	REGA	$7.50	$3.00	$0.00	$10.50	$0.00	$0.00	$1.50	$22.50	$0.00	$22.50
016	ELDO	$15.00	$1.50	$0.00	$12.00	$0.00	$0.00	$1.50	$30.00	$0.00	$30.00
017	CAPR	$6.00	$0.00	$0.00	$4.50	$1.50	$0.39	$1.50	$13.50	$0.39	$13.89
018	NOVA	$7.50	$0.00	$0.00	$4.50	$0.00	$0.00	$1.50	$13.50	$0.00	$13.50
019	MALI	$9.00	$3.00	$0.00	$15.00	$0.00	$0.00	$1.50	$28.50	$0.00	$28.50
020	CUTL	$6.00	$0.00	$0.00	$6.00	$0.00	$0.00	$1.50	$13.50	$0.00	$13.50
021	VENT	$7.50	$0.00	$0.00	$4.50	$0.00	$0.00	$1.50	$13.50	$0.00	$13.50

'B' VEHICLES

VEH. NO.	MODL	DISABLEMENT/MALADJUST INSP. LABOR	DISABLEMENT/MALADJUST CORRECTION LABOR	DISABLEMENT/MALADJUST CORRECTION PARTS	EMISSION COMPONENTS INSP. LABOR	EMISSION COMPONENTS CORRECTION LABOR	EMISSION COMPONENTS CORRECTION PARTS	IDLE SET LABOR	TOTAL LABOR	TOTAL PARTS	TOTAL COST
101	STAW	$7.50	$0.00	$0.00	$7.50	$0.00	$0.00	$3.00	$18.00	$0.00	$18.00
102	VOLA	$7.50	$0.00	$0.00	$13.50	$0.00	$0.00	$3.00	$24.00	$0.00	$24.00
103	STAW	$9.00	$0.00	$0.00	$10.50	$0.00	$0.00	$4.50	$24.00	$0.00	$24.00
104	STAW	$7.50	$0.00	$0.00	$10.50	$0.00	$0.00	$3.00	$21.00	$0.00	$21.00
105	STAW	$9.00	$1.50	$0.00	$12.00	$0.00	$0.00	$19.50	$42.00	$0.00	$42.00
106	CORD	$4.50	$0.00	$0.00	$9.00	$0.00	$0.00	$3.00	$16.50	$0.00	$16.50
107	CORD	$7.50	$0.00	$0.00	$10.50	$0.00	$0.00	$1.50	$19.50	$0.00	$19.50
108	LTD	$9.00	$0.00	$0.00	$18.00	$0.00	$0.00	$4.50	$31.50	$0.00	$31.50
109	PINT	$7.50	$0.00	$0.00	$15.00	$0.00	$0.00	$4.50	$27.00	$0.00	$27.00
110	GRAN	$9.00	$0.00	$0.00	$15.00	$0.00	$0.00	$4.50	$28.50	$0.00	$28.50
111	THND	$4.50	$0.00	$0.00	$10.50	$3.00	$0.00	$3.00	$21.00	$0.00	$21.00
112	THND	$9.00	$0.00	$0.00	$22.50	$0.00	$0.00	$4.50	$36.00	$0.00	$36.00
113	MONA	$9.00	$0.00	$0.00	$18.00	$0.00	$0.00	$4.50	$31.50	$0.00	$31.50
114	COUG	$4.50	$0.00	$0.00	$4.50	$0.00	$0.00	$4.50	$13.50	$0.00	$13.50
115	REGA	$7.50	$0.00	$0.00	$3.00	$0.00	$0.00	$1.50	$12.00	$0.00	$12.00
116	DEVI	$4.50	$0.00	$0.00	$3.00	$0.00	$0.00	$4.50	$12.00	$0.00	$12.00
117	CAPR	$7.50	$0.00	$0.00	$4.50	$0.00	$0.00	$1.50	$13.50	$0.00	$13.50
118	NOVA	$15.00	$0.00	$0.00	$7.50	$0.00	$0.00	$7.50	$30.00	$0.00	$30.00
119	CHEL	$6.00	$0.00	$0.00	$3.00	$0.00	$0.00	$3.00	$12.00	$0.00	$12.00
120	CUTL	$9.00	$0.00	$0.00	$12.00	$0.00	$0.00	$1.50	$22.50	$0.00	$22.50
121	GRNP	$4.50	$0.00	$0.00	$4.50	$0.00	$0.00	$1.50	$10.50	$0.00	$10.50

APPENDIX G - LISTING OF EMISSION TEST RESULTS

Legend

VEH NO. - Vehicle Number

YR - Model Year

MAKE - Vehicle Make

MODL - Vehicle Model

SEQ - Test Sequence Number

Each point of a test sequence consisted of a series of seven different exhaust emission tests. Of these, four were mass emissions test using the CVS testing procedure. The other three measured undiluted tailpipe exhaust concentrations. The results of these various tests are listed with the mass emission results on the left side of the page and the raw exhaust concentrations on the right side.

TEST TYPE - Indicates the test or portion of test being listed. (mass emission tests)

FEDERAL TEST PROCEDURE
COLD TRANS - Cold transient portion of FTP
COLD STAB - Cold stabilized portion of FTP
HOT TRANS - Hot transient portion of FTP
75 FTP - 1975 Federal Test Procedure Composite

HIGHWAY FUEL ECONOMY
BAG - Results of Highway Fuel Economy Test

SHORT CYCLE
BAG - Results of Federal Short Cycle Test

ACID CYCLE
BAG - Results of New Jersey/New York Composite Test

HC - Unburned hydrocarbon emissions in grams per mile

CO - Carbon monoxide emissions in grams per mile

CO_2 - Carbon dioxide emissions in grams per mile

NO_{xc} - Oxides of nitrogen emissions in grams per mile, corrected for humidity

FUEL ECON - Fuel economy calculated by the carbon balance method, in miles per gallon

TEST TYPE - Indicates the test or portion of test being listed. (undiluted exhaust concentrations)

KEYMODE
HI CRUISE - High cruise portion of Keymode Test
LO CRUISE - Low cruise portion of Keymode Test
IDLE - Measurements taken with engine at idle, transmission in Drive.

TWO SPEED IDLE
2250 RPM - Measurements taken with engine at 2250 RPM, transmission in Neutral
NEUTRAL - Measurements taken with engine at normal idle, transmission in Neutral

THREE MODE
50 MPH - 50 mile per hour portion of Federal Three Mode Test
30 MPH - 30 mile per hour portion of Federal Three Mode Test
IDLE (D) - Readings taken with engine at idle, transmission in Drive
IDLE (N) - Readings taken with engine at idle, transmission in Neutral

PPM/HEX HC - Concentration of unburned hydrocarbons in exhaust, measured in PPM hexane equivalent

% CO - Concentration of carbon monoxide in exhaust, measured in mole percent

PPM NO_x - Concentration of oxides of nitrogen in exhaust, measured in PPM with instrument in NO mode

ENGINE STATUS - Measurement of engine parameters for each test sequence

IRPM - Idle RPM

TIMING - Ignition timing in degrees (+ indicates before top dead center, - indicates after top dead center)

ICO - Concentration of carbon monoxide in exhaust with vehicle at normal idle, measured in mole perccent

IHC - Concentration of unburned hydrocarbons in exhaust with vehicle at normal idle, measured in PPM hexane equivalent

COMMENTS - A brief description of items that may be significant as regards analysis of the various test sequences

APPENDIX G

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
001	77	PLYM	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.68	10.4	621.5	1.35	13.9	HI CRUISE	0	0.020	208.5
					COLD STAB	0.22	5.3	563.4	0.50	15.5	LOW CRUISE	0	0.000	160.6
					HOT TRANS	0.61	9.3	552.2	1.12	15.6	IDLE	0	0.000	47.0
					75 FTP	0.42	7.5	572.3	0.84	15.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	49.0
					BAG	0.11	0.8	466.7	0.93	19.0	NEUTRAL	0	0.000	34.8
					SHORT CYCLE						THREE MODE			
					BAG	0.66	2.7	460.2	0.50	19.0	50 MPH	0	0.001	491.3
											30 MPH	0	0.000	247.7
					ACID CYCLE						IDLE (D)	0	0.000	45.0
					BAG	0.58	2.9	587.9	0.54	14.9	IDLE (N)	0	0.000	34.8
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+09			0.000		0	
					COMMENTS : CAPS MISSING-IDLE RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.79	8.9	616.5	1.71	14.0	HI CRUISE	0	0.031	282.3
					COLD STAB	0.28	3.4	546.8	0.64	16.0	LOW CRUISE	0	0.000	147.9
					HOT TRANS	1.41	19.0	531.5	1.25	15.7	IDLE	0	0.000	41.0
					75 FTP	0.70	8.8	557.0	1.03	15.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	47.0
					BAG	0.08	0.8	469.9	1.00	18.8	NEUTRAL	0	0.000	27.4
					SHORT CYCLE						THREE MODE			
					BAG	1.22	35.5	401.6	0.41	19.2	50 MPH	0	0.023	522.7
											30 MPH	0	0.000	226.9
					ACID CYCLE						IDLE (D)	0	0.000	72.1
					BAG	1.61	36.0	509.7	0.64	15.5	IDLE (N)	0	0.000	25.3
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+08			0.000		0	
					COMMENTS : ADJUSTED IDLE MIXTURE									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
002	77	PLYM	VOLA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.25	19.4	628.4	4.20	13.4	HI CRUISE	0	0.050	798.3
					COLD STAB	0.24	2.0	574.9	1.93	15.3	LOW CRUISE	0	0.025	296.8
					HOT TRANS	0.56	4.3	550.4	3.35	15.9	IDLE	0	0.000	44.0
					75 FTP	0.54	6.2	579.2	2.78	15.0				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	10	0.020	97.0
					BAG	0.12	1.0	448.7	3.77	19.7	NEUTRAL	25	0.040	38.0
					SHORT CYCLE						THREE MODE			
					BAG	0.56	3.3	456.0	2.18	19.2	50 MPH	15	0.070	1275.3
											30 MPH	25	0.020	921.1
					ACID CYCLE						IDLE (D)	25	0.025	47.0
					BAG	0.58	3.7	590.3	2.01	14.8	IDLE (N)	25	0.025	36.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		750		+08			0.100		30
					COMMENTS : CAPS OK-IDLE MIXTURE RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.04	18.4	648.7	1.67	13.0	HI CRUISE	0	0.020	296.8
					COLD STAB	0.23	1.8	579.7	0.58	15.2	LOW CRUISE	5	0.005	89.0
					HOT TRANS	0.83	5.2	551.8	1.47	15.8	IDLE	0	0.000	56.0
					75 FTP	0.56	6.2	586.3	1.05	14.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	2	0.010	31.0
					BAG	0.09	0.7	466.0	0.98	19.0	NEUTRAL	2	0.000	33.0
					SHORT CYCLE						THREE MODE			
					BAG	0.65	15.9	457.2	0.52	18.3	50 MPH	2	0.020	388.9
											30 MPH	5	0.000	149.5
					ACID CYCLE						IDLE (D)	0	0.000	58.0
					BAG	0.85	16.6	568.6	0.54	14.9	IDLE (N)	5	0.000	38.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		600		+08			0.000		0
					COMMENTS : IDLE MIXTURE ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRISLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
003	77	PLYM	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.64	14.1	740.1	4.50	11.6	HI CRUISE	0	0.005	1255.3
					COLD STAB	0.20	0.3	680.6	3.69	13.0	LOW CRUISE	0	0.000	650.8
					HOT TRANS	0.39	1.3	607.2	4.85	14.5	IDLE	0	0.000	64.6
					75 FTP	0.34	3.4	672.8	4.17	13.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	5	0.000	165.7
					BAG	0.08	0.2	502.7	4.94	17.6	NEUTRAL	20	0.010	55.0
					SHORT CYCLE						THREE MODE			
					BAG	0.23	0.7	531.0	3.29	16.7	50 MPH	5	0.010	1181.5
											30 MPH	0	0.010	1021.4
					ACID CYCLE						IDLE (D)	0	0.015	67.4
					BAG	0.30	0.7	705.0	2.87	12.6	IDLE (N)	0	0.010	52.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+05			0.040		25	
					COMMENTS : CAPS MISSING-OSAC BYPASSED-TIMING+5-EGR PLUGGED-IDLE CO RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.72	18.5	891.2	1.17	9.6	HI CRUISE	0	0.007	201.4
					COLD STAB	0.10	0.3	791.4	0.95	11.2	LOW CRUISE	0	0.002	317.3
					HOT TRANS	0.35	7.5	743.1	0.91	11.7	IDLE	0	0.000	130.0
					75 FTP	0.30	6.0	798.8	0.98	11.0				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.007	51.0
					BAG	0.12	1.2	648.6	0.65	13.6	NEUTRAL	0	0.004	61.7
					SHORT CYCLE						THREE MODE			
					BAG	0.24	3.4	576.1	0.99	15.2	50 MPH	0	0.015	175.9
											30 MPH	0	0.000	287.3
					ACID CYCLE						IDLE (D)	0	0.000	107.1
					BAG	0.21	1.4	803.4	0.87	11.0	IDLE (N)	0	0.000	64.6
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	740		+00			0.000		0	
					COMMENTS : OSAC CONNECTED-TIMING ADJ-EGR UNPLUGGED-IDLE MIXTURE ADJ									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEI HC	$ CO	PPM NO_x
004	77	DODG	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.55	10.4	612.3	2.02	14.0	HI CRUISE	3	0.030	629.2
					COLD STAB	0.22	3.4	589.2	0.68	14.9	LOW CRUISE	10	0.010	186.1
					HOT TRANS	0.95	9.9	569.3	1.59	15.1	IDLE	7	0.010	61.7
					75 FTP	0.70	6.6	588.5	1.20	14.8				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.09	1.1	475.6	1.00	18.6	2250 RPM	2	0.010	66.5
											NEUTRAL	10	0.020	36.9
					SHORT CYCLE						THREE MODE			
					BAG	0.49	7.2	493.3	0.67	17.5	50 MPH	4	0.045	760.2
											30 MPH	2	0.037	317.3
					ACID CYCLE						IDLE (D)	7	0.060	63.7
					BAG	0.46	6.2	689.8	0.82	12.7	IDLE (N)	5	0.040	41.0
					ENG STATUS	IRPM		TIMING			ICO		INC	
					MEASURED	970		+16			0.010		5	
					COMMENTS : CAPS MISSING-IDLE RICH-TIMING+8									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.39	11.6	659.7	1.87	13.0	HI CRUISE	0	0.035	408.5
					COLD STAB	0.19	3.6	615.7	0.53	14.3	LOW CRUISE	0	0.005	158.1
					HOT TRANS	0.60	7.3	593.8	1.39	14.6	IDLE	0	0.001	55.9
					75 FTP	0.55	6.2	618.8	1.04	14.1				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.10	1.2	501.0	0.84	17.6	2250 RPM	0	0.000	42.0
											NEUTRAL	0	0.000	28.5
					SHORT CYCLE						THREE MODE			
					BAG	0.30	4.1	535.1	0.56	16.4	50 MPH	0	0.050	705.2
											30 MPH	5	0.005	277.4
					ACID CYCLE						IDLE (D)	5	0.000	60.8
					BAG	0.43	4.6	675.3	0.77	13.0	IDLE (N)	2	0.000	38.9
					ENG STATUS	IRPM		TIMING			ICO		INC	
					MEASURED	830		+08			0.040		20	
					COMMENTS : IDLE MIXTURE AND IDLE RPM ADJUSTED-TIMING ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

ICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX---% HC	CO	PPM NO_x
005	77	DODG	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.05	27.2	899.9	0.92	9.4	HI CRUISE	15	0.038	-97.0
					COLD STAB	0.15	1.4	805.0	1.06	11.0	LOW CRUISE	15	0.033	-97.0
					HOT TRANS	0.52	13.3	751.9	0.90	11.5	IDLE	13	0.040	-97.0
					75 FTP	0.44	9.9	810.1	0.98	10.7				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	25	0.043	-97.0
					BAG	0.11	2.4	626.0	0.87	14.1	NEUTRAL	17	0.042	-97.0
					SHORT CYCLE						THREE MODE			
					BAG	0.23	5.1	618.6	1.06	14.1	50 MPH	29	0.063	-97.0
											30 MPH	29	0.060	-97.0
					ACID CYCLE						IDLE (D)	28	0.059	-97.0
					BAG	0.27	3.7	844.9	1.01	10.4	IDLE (N)	27	0.056	-97.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	935		+05			0.052		22	
					COMMENTS : CAPS MISSING-TIMING+5									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.83	23.4	946.6	0.72	9.0	HI CRUISE	2	0.012	225.0
					COLD STAB	0.12	0.4	854.7	0.87	10.4	LOW CRUISE	1	0.018	440.4
					HOT TRANS	0.35	5.6	805.9	0.87	10.9	IDLE	1	0.021	105.5
					75 FTP	0.33	6.5	860.3	0.84	10.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	1	0.023	121.8
					BAG	0.11	0.9	662.4	0.63	13.4	NEUTRAL	5	0.024	63.0
					SHORT CYCLE						THREE MODE			
					BAG	0.21	3.0	602.4	0.83	14.6	50 MPH	5	0.033	312.1
											30 MPH	5	0.029	230.0
					ACID CYCLE						IDLE (D)	5	0.030	115.0
					BAG	0.20	0.7	806.9	0.69	11.0	IDLE (N)	5	0.033	67.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	700		+00			0.035		5	
					COMMENTS : TIMING ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
006	77	DODG	CHAR	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.05	17.9	678.0	3.70	12.5	HI CRUISE	0	0.000	1275.3
					COLD STAB	0.20	1.8	707.0	1.51	12.5	LOW CRUISE	0	0.000	859.7
					HOT TRANS	0.60	5.2	618.7	4.23	14.1	IDLE	0	0.000	62.0
					75 FTP	0.48	6.0	676.9	2.70	12.9				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	29	0.000	158.6
					BAG	0.07	0.1	483.3	5.80	18.3	NEUTRAL	5	0.000	36.0
					SHORT CYCLE						THREE MODE			
					BAG	0.25	2.3	546.3	1.88	16.1	50 MPH	2	0.005	1145.2
											30 MPH	2	0.010	921.1
					ACID CYCLE						IDLE (D)	1	0.010	61.0
					BAG	0.38	4.5	731.1	1.13	12.0	IDLE (N)	0	0.005	46.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		850		+13		0.001		0	
					COMMENTS : CAPS OK-TIMING+7-NO STEM MOVEMENT IN EGR-IDLE MIX RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.63	21.7	778.0	0.97	10.9	HI CRUISE	0	0.000	460.5
					COLD STAB	0.32	20.1	800.9	0.37	10.6	LOW CRUISE	0	0.000	144.5
					HOT TRANS	0.72	14.2	677.1	1.05	12.6	IDLE	0	0.000	48.0
					75 FTP	0.49	18.8	762.4	0.68	11.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	25	0.000	61.0
					BAG	0.06	1.0	539.7	1.15	16.4	NEUTRAL	5	0.000	33.0
					SHORT CYCLE						THREE MODE			
					BAG	0.53	17.4	588.5	0.46	14.4	50 MPH	0	0.000	327.5
											30 MPH	1	0.000	212.9
					ACID CYCLE						IDLE (D)	5	0.000	52.0
					BAG	0.70	25.0	779.5	0.41	10.8	IDLE (N)	4	0.000	34.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		750		+06		0.000		4	
					COMMENTS : TIMING ADJ-EGR REPAIRED-IDLE MIXTURE ADJ-CHOKE STUCK									
				3	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.84	26.4	764.7	1.01	11.0	HI CRUISE	0	0.000	440.1
					COLD STAB	0.28	16.5	797.5	0.38	10.8	LOW CRUISE	0	0.002	147.0
					HOT TRANS	0.46	10.0	656.5	1.10	13.2	IDLE	0	0.000	48.0
					75 FTP	0.45	16.7	752.3	0.71	11.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	31	0.000	69.0
					BAG	0.06	0.8	523.4	1.18	16.9	NEUTRAL	5	0.000	35.0
					SHORT CYCLE						THREE MODE			
					BAG	0.44	30.1	576.0	0.46	14.2	50 MPH	0	0.000	327.5
											30 MPH	0	0.000	207.8
					ACID CYCLE						IDLE (D)	0	0.000	54.0
					BAG	0.63	18.9	802.0	0.46	10.6	IDLE (N)	0	0.000	38.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		750		+06		0.000		0	
					COMMENTS : CHOKE REPAIRED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEI HC	$ CO	PPM NO_x
007	77	CHRY	CORD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.69	28.9	876.8	1.19	9.6	HI CRUISE	7	0.065	442.4
					COLD STAB	0.12	7.9	878.9	0.60	10.0	LOW CRUISE	12	0.062	190.5
					HOT TRANS	0.39	10.4	785.2	1.30	11.1	IDLE	14	0.060	57.3
					75 FTP	0.31	12.9	852.9	0.91	10.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	10	0.005	68.3
					BAG	0.04	0.9	639.1	1.28	13.9	NEUTRAL	13	0.010	44.0
					SHORT CYCLE						THREE MODE			
					BAG	0.16	9.9	655.0	0.50	13.2	50 MPH	11	0.060	385.7
											30 MPH	13	0.058	179.5
					ACID CYCLE						IDLE (D)	16	0.055	58.6
					BAG	0.25	18.6	921.8	0.38	9.3	IDLE (N)	16	0.060	44.3
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	790		+06			0.015		7	
					COMMENTS : CAPS OK-IDLE RICH.									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.64	16.7	858.2	1.62	10.0	HI CRUISE	0	0.001	417.5
					COLD STAB	0.16	4.9	823.7	0.72	10.7	LOW CRUISE	0	0.000	170.0
					HOT TRANS	0.70	10.3	728.6	1.34	11.9	IDLE	0	0.000	63.0
					75 FTP	0.40	8.8	804.8	1.07	10.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	70.0
					BAG	0.03	0.9	619.0	1.26	14.3	NEUTRAL	0	0.000	45.0
					SHORT CYCLE						THREE MODE			
					BAG	0.75	26.5	619.2	0.48	13.4	50 MPH	0	0.000	377.8
											30 MPH	0	0.000	132.5
					ACID CYCLE						IDLE (D)	0	0.000	70.0
					BAG	0.41	9.6	856.4	0.64	10.2	IDLE (N)	0	0.000	42.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	700		+06			0.000		0	
					COMMENTS : ADJUSTED IDLE MIXTURE									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEI HC	$ CO	PPM NO_x
008	77	FORD	LTD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.66	36.8	835.9	4.71	9.8	HI CRUISE	0	0.000	1701.4
					COLD STAB	0.30	8.9	832.9	3.98	10.5	LOW CRUISE	0	0.000	900.6
					HOT TRANS	0.50	13.8	753.4	4.72	11.4	IDLE	320	8.300	20.0
					75 FTP	0.84	16.0	811.8	4.33	10.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	164.7
					BAG	0.08	3.8	647.0	4.30	13.6	NEUTRAL	340	4.600	39.0
					SHORT CYCLE						THREE MODE			
					BAG	0.99	16.3	646.3	3.70	13.1	50 MPH	0	0.000	1405.5
											30 MPH	0	0.000	1301.4
					ACID CYCLE						IDLE (D)	250	5.600	50.0
					BAG	3.39	58.0	759.3	3.54	10.3	IDLE (N)	340	5.600	38.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+24			5.200		240	
					COMMENTS : CAPS MISSING-TIMING+6-EGR PLUGGED-ICO RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.03	32.8	835.1	0.86	10.0	HI CRUISE	0	0.015	255.9
					COLD STAB	0.43	11.8	791.3	0.73	10.9	LOW CRUISE	0	0.000	157.1
					HOT TRANS	0.55	9.7	736.8	0.90	11.8	IDLE	400	8.200	17.0
					75 FTP	0.58	15.6	785.4	0.80	10.9				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	80.0
					BAG	0.08	4.8	638.2	0.63	13.7	NEUTRAL	400	5.500	34.0
					SHORT CYCLE						THREE MODE			
					BAG	1.10	19.9	602.4	0.83	13.9	50 MPH	10	0.000	307.0
											30 MPH	8	0.000	225.2
					ACID CYCLE						IDLE (D)	400	8.000	40.0
					BAG	3.97	58.1	739.9	1.01	10.5	IDLE (N)	600	6.500	30.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	600		+18			8.300		400	
					COMMENTS : TIMING ADJUSTED-EGR UNPLUGGED-IDLE CO ADJUSTED									
				3	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.38	26.8	849.4	0.67	9.9	HI CRUISE	.0	0.032	218.0
					COLD STAB	0.24	0.9	773.6	0.93	11.4	LOW CRUISE	0	0.000	131.8
					HOT TRANS	0.40	6.6	727.8	0.95	12.0	IDLE	150	2.800	66.0
					75 FTP	0.52	7.8	776.7	0.88	11.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	74.0
					BAG	0.06	2.8	641.6	0.68	13.7	NEUTRAL	1	0.000	65.0
					SHORT CYCLE						THREE MODE			
					BAG	0.33	1.0	594.2	0.98	14.9	50 MPH	0	0.000	266.1
											30 MPH	0	0.000	223.0
					ACID CYCLE						IDLE (D)	0	0.000	154.6
					BAG	0.31	0.6	776.1	0.96	11.4	IDLE (N)	140	2.000	36.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	600		+18			2.300		150	
					COMMENTS : READJUSTED IDLE CO									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
009	77	FORD	PINT	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.47	21.2	428.0	1.40	18.9	HI CRUISE	46	0.002	726.6
					COLD STAB	0.43	2.8	471.5	0.71	18.6	LOW CRUISE	39	0.031	327.5
					HOT TRANS	0.96	5.4	385.0	1.35	22.4	IDLE	2	0.012	46.0
					75 FTP	0.99	7.3	438.9	1.03	19.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	11	0.000	82.0
					BAG	0.26	0.8	270.5	1.64	32.6	NEUTRAL	10	0.000	40.0
					SHORT CYCLE						THREE MODE			
					BAG	0.42	1.4	348.2	0.69	25.2	50 MPH	40	0.012	900.6
											30 MPH	38	0.009	348.0
					ACID CYCLE						IDLE (D)	0	0.000	0.0
					BAG	1.20	10.8	535.7	1.07	15.9	IDLE (N)	11	0.009	48.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		1400		+06		0.016		8	
					COMMENTS : CAPS MISSING									
010	77	FORD	GRAN	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.01	29.9	726.4	1.41	11.4	HI CRUISE	0	0.012	218.0
					COLD STAB	0.38	5.2	696.7	0.77	12.6	LOW CRUISE	0	0.001	205.3
					HOT TRANS	0.76	9.7	646.8	1.17	13.4	IDLE	1	0.000	152.1
					75 FTP	0.82	11.5	689.2	1.01	12.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	11	0.000	65.0
					BAG	0.21	2.8	531.4	1.19	16.5	NEUTRAL	15	0.000	63.0
					SHORT CYCLE						THREE MODE			
					BAG	0.38	2.5	551.2	0.94	16.0	50 MPH	5	0.005	245.6
											30 MPH	9	0.001	307.0
					ACID CYCLE						IDLE (D)	11	0.000	179.9
					BAG	0.69	3.8	743.3	0.98	11.8	IDLE (N)	10	0.000	64.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		650		+12		0.020		10	
					COMMENTS : CAPS OK-ICO RICH-CHOKE MISADJUSTED									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.68	24.5	699.3	1.85	11.9	HI CRUISE	10	0.002	470.8
					COLD STAB	0.54	3.3	652.4	1.27	13.5	LOW CRUISE	13	0.000	286.6
					HOT TRANS	0.79	8.6	615.5	1.61	14.1	IDLE	15	0.000	317.3
					75 FTP	0.84	9.1	652.0	1.48	13.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	25	0.000	83.0
					BAG	0.24	1.8	516.3	1.57	17.1	NEUTRAL	200	0.000	116.6
					SHORT CYCLE						THREE MODE			
					BAG	0.67	0.9	506.8	1.35	17.4	50 MPH	19	0.002	450.3
											30 MPH	21	0.000	409.4
					ACID CYCLE						IDLE (D)	15	0.000	307.0
					BAG	1.04	0.3	685.7	1.52	12.9	IDLE (N)	135	0.000	124.2
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		650		+12		0.000		21	
					COMMENTS : IDLE CO & IDLE RPM ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
011	77	FORD	LTD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.93	16.7	716.8	2.45	11.9	HI CRUISE	0	0.010	685.7
					COLD STAB	0.22	1.7	701.1	2.40	12.6	LOW CRUISE	0	0.000	429.8
					HOT TRANS	0.69	3.6	635.2	2.47	13.8	IDLE	0	0.000	962.0
					75 FTP	0.49	5.3	686.4	2.43	12.7				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.13	0.7	507.1	2.08	17.4	2250 RPM	75	0.000	154.6
											NEUTRAL	40	0.000	245.6
					SHORT CYCLE						THREE MODE			
					BAG	0.21	0.1	555.2	2.55	16.0	50 MPH	0	0.011	736.9
											30 MPH	0	0.000	603.8
					ACID CYCLE						IDLE (D)	0	0.000	1003.0
					BAG	0.25	0.0	762.0	3.67	11.6	IDLE (N)	22	0.005	228.1
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+12			0.000		0	
					COMMENTS : CAPS OK-IDLE CO LEAN									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.27	26.3	701.7	2.22	11.9	HI CRUISE	0	0.029	614.1
					COLD STAB	1.17	27.4	649.5	1.65	12.7	LOW CRUISE	0	0.005	327.5
					HOT TRANS	1.18	12.2	628.3	2.15	13.6	IDLE	191	2.400	131.8
					75 FTP	1.19	23.0	654.5	1.90	12.8				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.25	1.1	518.9	2.26	17.0	2250 RPM	170	0.000	126.7
											NEUTRAL	380	0.700	12.0
					SHORT CYCLE						THREE MODE			
					BAG	0.84	3.9	532.7	2.01	16.4	50 MPH	8	0.015	644.8
											30 MPH	2	0.001	470.8
					ACID CYCLE						IDLE (D)	220	2.400	116.6
					BAG	1.38	4.7	694.7	2.09	12.6	IDLE (N)	500	1.200	38.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			1.900		260	
					COMMENTS : ADJUSTED IDLE RPM- ADJUSTED IDLE CO									
				3	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.01	17.7	740.9	2.52	11.5	HI CRUISE	1	0.025	614.1
					COLD STAB	0.59	1.4	690.1	1.98	12.8	LOW CRUISE	0	0.000	337.7
					HOT TRANS	0.69	5.5	633.3	2.23	13.8	IDLE	4	0.000	245.6
					75 FTP	0.70	5.8	685.1	2.16	12.7				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.25	1.0	523.7	2.39	16.9	2250 RPM	165	0.000	134.3
											NEUTRAL	90	0.000	109.0
					SHORT CYCLE						THREE MODE			
					BAG	0.52	0.1	531.0	2.23	16.7	50 MPH	11	0.020	695.0
											30 MPH	8	0.001	470.8
					ACID CYCLE						IDLE (D)	15	0.000	266.1
					BAG	0.81	0.9	711.9	2.66	12.4	IDLE (N)	150	0.480	24.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			0.005		0	
					COMMENTS : READJUSTED IDLE CO									

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEI HC	$ CO	PPM NO_x
012	77	FORD	THND	1	FEDERAL TEST PROCEDURE						KEIMODE			
					COLD TRANS	3.70	53.4	767.2	1.87	10.3	HI CRUISE	150	4.200	419.6
					COLD STAB	5.01	136.3	569.5	1.40	11.1	LOW CRUISE	210	3.800	276.3
					HOT TRANS	4.46	124.8	539.0	1.69	11.8	IDLE	350	7.700	53.0
					75 FTP	4.59	116.1	601.9	1.58	11.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	240	1.800	111.5
					BAG	2.91	102.5	436.8	1.28	14.6	NEUTRAL	460	6.500	36.0
					SHORT CYCLE						THREE MODE			
					BAG	4.37	77.6	468.0	1.80	14.7	50 MPH	145	3.600	440.1
											30 MPH	200	3.100	388.9
					ACID CYCLE						IDLE (D)	360	8.000	43.0
					BAG	4.71	100.3	603.7	1.78	11.4	IDLE (N)	550	6.100	40.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		610		+10			7.200		340
					COMMENTS : CAPS MISSING-CHOKE LEAN-IDLE CO RICH-VACUUM LINES REROUTED									
				2	FEDERAL TEST PROCEDURE						KEIMODE			
					COLD TRANS	0.67	10.2	820.7	2.17	10.6	HI CRUISE	0	0.012	440.1
					COLD STAB	0.27	3.7	759.9	1.66	11.6	LOW CRUISE	0	0.000	245.6
					HOT TRANS	0.35	12.1	710.2	1.53	12.2	IDLE	10	0.000	109.0
					75 FTP	0.37	7.3	758.8	1.73	11.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	3	0.000	75.0
					BAG	0.13	1.3	571.0	1.59	15.5	NEUTRAL	9	0.000	124.2
					SHORT CYCLE						THREE MODE			
					BAG	0.25	1.4	594.7	1.84	14.8	50 MPH	0	0.010	450.3
											30 MPH	0	0.000	348.0
					ACID CYCLE						IDLE (D)	0	0.000	327.5
					BAG	0.44	0.9	756.4	2.16	11.7	IDLE (N)	15	0.002	109.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		640		+10			0.000		5
					COMMENTS : ADJUSTED IDLE MIXTURE-VACUUM CONNECTED-CHOKE ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
013	77	MERC	MONA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.02	4.0	657.5	2.74	13.3	HI CRUISE	10	0.000	655.0
					COLD STAB	0.36	0.5	619.3	1.77	14.3	LOW CRUISE	9	0.000	358.2
					HOT TRANS	0.63	1.6	572.6	2.32	15.4	IDLE	5	0.000	245.6
					75 FTP	0.57	1.5	614.4	2.12	14.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	39	0.000	83.0
					BAG	0.20	0.3	469.9	2.38	18.8	NEUTRAL	20	0.000	62.0
					SHORT CYCLE						THREE MODE			
					BAG	0.49	0.2	487.8	1.77	18.1	50 MPH	20	0.000	583.3
											30 MPH	16	0.000	460.5
					ACID CYCLE						IDLE (D)	10	0.000	218.0
					BAG	0.76	0.3	655.8	1.87	13.5	IDLE (N)	9	0.000	69.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	610		+12			0.000		9	
					COMMENTS : CAPS OK-IDLE MIXTURE RICH									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.09	9.5	797.3	2.18	10.8	HI CRUISE	10	0.000	849.4
					COLD STAB	0.42	0.8	662.5	1.65	13.3	LOW CRUISE	9	0.000	210.4
					HOT TRANS	0.56	1.2	610.8	1.89	14.4	IDLE	4	0.000	218.0
					75 FTP	0.80	2.7	676.1	1.83	13.0				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	12	0.000	87.0
					BAG	0.19	0.5	497.1	1.65	17.8	NEUTRAL	50	0.000	87.0
					SHORT CYCLE						THREE MODE			
					BAG	0.38	0.2	530.6	1.42	16.7	50 MPH	7	0.060	317.3
											30 MPH	8	0.000	307.0
					ACID CYCLE						IDLE (D)	10	0.000	245.6
					BAG	0.73	0.8	716.1	1.67	12.3	IDLE (N)	35	0.000	81.9
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			0.000		65	
					COMMENTS : ADJUSTED IDLE RPM & IDLE MIXTURE									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
014	77	MERC	COUG	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.29	10.4	697.7	2.50	12.4	HI CRUISE	0	0.005	818.7
					COLD STAB	0.29	2.6	654.8	2.03	13.5	LOW CRUISE	0	0.000	532.2
					HOT TRANS	0.37	5.4	609.1	2.39	14.3	IDLE	0	0.000	177.4
					75 FTP	0.52	5.0	651.2	2.22	13.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	15	0.000	119.1
					BAG	0.16	0.6	489.9	2.81	18.1	NEUTRAL	0	0.000	187.6
					SHORT CYCLE						THREE MODE			
					BAG	0.65	1.4	501.8	2.65	17.5	50 MPH	5	0.005	900.6
											30 MPH	1	0.001	798.3
					ACID CYCLE						IDLE (D)	250	2.400	96.0
					BAG	1.03	3.9	662.6	2.67	13.2	IDLE (N)	370	2.100	46.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		580		+12			1.800		290
					COMMENTS : CAPS MISSING-CHOKE 2NL-IDLE CO RICH-IDLE RPM LOW									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.73	10.9	713.3	2.52	12.1	HI CRUISE	0	0.000	777.8
					COLD STAB	0.30	0.3	656.7	2.67	13.5	LOW CRUISE	0	0.000	491.2
					HOT TRANS	0.40	3.4	619.4	2.77	14.2	IDLE	0	0.000	388.9
					75 FTP	0.41	3.3	658.2	2.86	13.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	21	0.000	121.7
					BAG	0.17	0.6	496.5	2.96	17.8	NEUTRAL	11	0.000	101.4
					SHORT CYCLE						THREE MODE			
					BAG	0.27	0.0	517.7	2.74	17.1	50 MPH	8	0.000	829.0
											30 MPH	3	0.000	644.8
					ACID CYCLE						IDLE (D)	4	0.000	429.8
					BAG	0.41	0.1	690.0	3.59	12.8	IDLE (N)	10	0.000	116.6
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		650		+12			0.000		0
					COMMENTS : ADJUSTED IDLE CO & IDLE RPM-CHOKE ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xG}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
015	77	BUIC	REGA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.79	20.0	721.4	1.66	11.7	HI CRUISE	0	0.000	409.4
					COLD STAB	0.14	0.2	683.3	1.37	13.0	LOW CRUISE	0	0.000	276.3
					HOT TRANS	0.57	10.0	625.2	1.59	13.8	IDLE	0	0.000	96.3
					75 FTP	0.39	6.9	675.3	1.49	12.9				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	89.0
					BAG	0.07	2.2	507.9	1.63	17.3	NEUTRAL	12	0.000	30.0
					SHORT CYCLE						THREE MODE			
					BAG	0.21	0.3	530.2	1.13	16.7	50 MPH	0	0.000	388.9
											30 MPH	0	0.000	307.0
					ACID CYCLE						IDLE (D)	0	0.000	78.6
					BAG	0.31	0.0	665.5	1.25	13.3	IDLE (N)	4	0.000	28.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		560		+10		0.000		10	
					COMMENTS : CAPS OK-CHOKE MALADJUSTED									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.72	12.2	735.6	1.85	11.7	HI CRUISE	0	0.000	368.4
					COLD STAB	0.12	0.3	678.5	1.42	13.1	LOW CRUISE	0	0.000	245.6
					HOT TRANS	0.75	6.7	612.6	1.68	14.2	IDLE	0	0.000	103.9
					75 FTP	0.41	4.5	672.3	1.58	13.0				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	8	0.000	86.0
					BAG	0.06	1.1	490.6	1.88	18.0	NEUTRAL	11	0.000	36.0
					SHORT CYCLE						THREE MODE			
					BAG	0.14	0.1	539.5	1.20	16.4	50 MPH	0	0.000	399.1
											30 MPH	0	0.000	266.1
					ACID CYCLE						IDLE (D)	0	0.000	79.0
					BAG	0.30	0.0	689.3	1.31	12.9	IDLE (N)	0	0.000	29.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		540		+08		0.000		0	
					COMMENTS : CHOKE ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
016	77	CADI	ELDO	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.44	22.3	856.1	2.67	9.9	HI CRUISE	0	0.000	706.2
					COLD STAB	0.12	0.3	849.1	2.94	10.4	LOW CRUISE	0	0.000	470.8
					HOT TRANS	0.41	11.0	750.8	2.23	11.5	IDLE	0	0.000	767.6
					75 FTP	0.47	7.7	823.7	2.73	10.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	15	0.000	86.0
					BAG	0.06	0.7	580.4	1.72	15.3	NEUTRAL	0	0.000	126.7
					SHORT CYCLE						THREE MODE			
					BAG	0.10	0.0	650.5	2.18	13.6	50 MPH	0	0.000	695.9
											30 MPH	0	0.000	521.9
					ACID CYCLE						IDLE (D)	0	0.000	685.7
					BAG	0.17	0.0	857.2	2.04	10.3	IDLE (N)	0	0.000	144.5
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		630		+22		0.000		0	
					COMMENTS : CAPS OK-TIMING+4									
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.75	32.2	888.2	2.29	9.4	HI CRUISE	0	0.000	521.9
					COLD STAB	0.11	0.4	838.7	1.99	10.6	LOW CRUISE	0	0.000	358.2
					HOT TRANS	0.47	13.1	765.4	1.72	11.3	IDLE	0	0.000	358.2
					75 FTP	0.55	10.4	828.9	1.98	10.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	15	0.000	80.0
					BAG	0.05	1.0	637.6	1.32	13.9	NEUTRAL	0	0.000	74.0
					SHORT CYCLE						THREE MODE			
					BAG	0.13	0.2	674.4	1.40	13.1	50 MPH	0	0.000	532.2
											30 MPH	0	0.000	307.0
					ACID CYCLE						IDLE (D)	0	0.000	296.8
					BAG	0.23	0.0	834.3	1.38	10.6	IDLE (N)	0	0.000	82.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		600		+18		0.000		0	
					COMMENTS : TIMING ADJUSTED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
017	77	CHEV	CAPR	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.90	8.2	722.1	2.17	12.0	HI CRUISE	0	0.000	481.0
					COLD STAB	0.11	0.0	698.9	2.18	12.7	LOW CRUISE	0	0.000	286.6
					HOT TRANS	0.35	1.3	633.4	2.25	13.9	IDLE	0	0.000	266.1
					75 FTP	0.34	2.0	685.8	2.20	12.9				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	3	0.000	97.0
					BAG	0.05	0.7	506.2	2.40	17.5	NEUTRAL	25	0.000	66.0
					SHORT CYCLE						THREE MODE			
					BAG	0.15	0.0	552.8	1.87	16.0	50 MPH	0	0.000	450.3
											30 MPH	0	0.000	337.7
					ACID CYCLE						IDLE (D)	0	0.000	327.5
					BAG	0.28	0.0	760.4	2.44	11.7	IDLE (N)	12	0.000	80.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		610		+09		0.000		0	
					COMMENTS : CAPS OK-VACUUM HOSE TO AIR COND. DEFECTIVE									
				3	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.91	14.5	731.1	2.24	11.7	HI CRUISE	0	0.000	695.9
					COLD STAB	0.08	0.0	693.6	2.18	12.8	LOW CRUISE	0	0.000	409.4
					HOT TRANS	0.19	3.7	634.0	2.30	13.9	IDLE	0	0.000	501.5
					75 FTP	0.28	4.0	685.0	2.22	12.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	97.0
					BAG	0.04	0.6	503.3	2.33	17.6	NEUTRAL	0	0.000	49.0
					SHORT CYCLE						THREE MODE			
					BAG	0.09	0.0	531.9	1.77	16.7	50 MPH	0	0.000	655.0
											30 MPH	0	0.000	511.7
					ACID CYCLE						IDLE (D)	0	0.000	491.2
					BAG	0.20	0.0	751.0	2.38	11.8	IDLE (N)	0	0.000	65.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		700		+09		0.000		0	
					COMMENTS : VACUUM HOSE TO AIR COND. REPLACED									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
018	77	CHEV	NOVA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.09	14.1	680.1	1.82	12.6	HI CRUISE	0	0.000	440.1
					COLD STAB	0.23	0.1	664.8	1.20	13.3	LOW CRUISE	0	0.000	212.9
					HOT TRANS	0.43	1.8	602.6	1.70	14.6	IDLE	0	0.000	58.0
					75 FTP	0.46	3.4	651.0	1.47	13.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	8	0.000	64.0
					BAG	0.10	0.2	491.4	1.94	18.0	NEUTRAL	35	0.000	22.0
					SHORT CYCLE						THREE MODE			
					BAG	0.30	0.0	523.4	1.11	16.9	50 MPH	0	0.000	317.3
											30 MPH	0	0.000	139.4
					ACID CYCLE						IDLE (D)	0	0.000	53.0
					BAG	0.55	0.4	708.5	1.17	12.5	IDLE (N)	8	0.000	26.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+08			0.000		2	
					COMMENTS : CAPS OK									
				6	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.88	9.4	714.0	2.04	12.1	HI CRUISE	0	0.000	368.4
					COLD STAB	0.17	0.0	677.4	1.38	13.1	LOW CRUISE	0	0.000	119.1
					HOT TRANS	0.40	1.1	626.0	2.05	14.1	IDLE	0	0.000	54.0
					75 FTP	0.38	2.2	670.9	1.70	13.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	8	0.000	68.0
					BAG	0.09	0.1	533.4	2.38	16.6	NEUTRAL	41	0.000	22.0
					SHORT CYCLE						THREE MODE			
					BAG	0.22	0.0	531.0	1.65	16.7	50 MPH	2	0.000	327.5
											30 MPH	10	0.000	152.1
					ACID CYCLE						IDLE (D)	2	0.000	44.0
					BAG	0.61	0.0	703.4	1.32	12.6	IDLE (N)	15	0.000	24.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+08			0.000		2	
					COMMENTS : D049 WAS RUN ON WRONG LOAD 13.2									
019	77	CHEV	MALI	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.11	20.4	742.6	1.98	11.4	HI CRUISE	0	0.000	348.0
					COLD STAB	0.17	0.6	742.4	1.84	11.9	LOW CRUISE	0	0.000	240.8
					HOT TRANS	0.30	2.1	654.6	1.89	13.5	IDLE	0	0.000	307.0
					75 FTP	0.40	5.1	718.5	1.88	12.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	88.0
					BAG	0.07	0.1	507.5	1.99	17.5	NEUTRAL	0	0.000	51.0
					SHORT CYCLE						THREE MODE			
					BAG	0.21	0.2	547.2	1.58	16.2	50 MPH	0	0.005	429.8
											30 MPH	0	0.000	266.1
					ACID CYCLE						IDLE (D)	0	0.001	348.0
					BAG	0.33	0.0	748.5	1.97	11.8	IDLE (N)	0	0.000	62.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	600		+09			0.001		0	
					COMMENTS : CAPS PRESENT									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'A' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
020	77	OLDS	CUTL	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.95	8.1	640.2	2.06	13.5	HI CRUISE	0	0.000	655.0
					COLD STAB	0.13	2.0	644.7	1.09	13.7	LOW CRUISE	0	0.000	399.1
					HOT TRANS	0.47	2.8	559.7	1.74	15.7	IDLE	0	0.000	106.4
					75 FTP	0.39	3.5	620.6	1.46	14.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.001	177.4
					BAG	0.08	1.1	435.7	1.78	20.3	NEUTRAL	0	0.000	50.0
					SHORT CYCLE						THREE MODE			
					BAG	0.10	0.2	511.6	1.05	17.3	50 MPH	0	0.000	777.8
											30 MPH	0	0.000	388.9
					ACID CYCLE						IDLE (D)	0	0.000	111.5
					BAG	0.15	0.5	662.3	1.09	13.4	IDLE (N)	0	0.000	53.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	515		+20			0.000		0	
					COMMENTS : CAPS OK-IDLE RICH									
021	77	PONT	VENT	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.99	18.2	654.6	2.24	12.9	HI CRUISE	0	0.000	695.9
					COLD STAB	0.25	0.0	631.5	1.98	14.0	LOW CRUISE	0	0.000	307.0
					HOT TRANS	0.44	5.4	576.5	2.20	15.1	IDLE	1	0.000	202.8
					75 FTP	0.46	5.2	621.3	2.09	14.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	5	0.000	101.4
					BAG	0.09	0.2	480.6	2.39	18.4	NEUTRAL	45	0.000	46.0
					SHORT CYCLE						THREE MODE			
					BAG	0.41	0.5	512.3	1.60	17.3	50 MPH	9	0.000	614.1
											30 MPH	7	0.000	358.2
					ACID CYCLE						IDLE (D)	2	0.000	207.8
					BAG	0.90	0.0	683.7	1.85	12.9	IDLE (N)	20	0.000	44.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	635		+08			0.000		0	
					COMMENTS : CAPS OK-FAILED NOX									
				6	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.97	15.3	692.4	2.53	12.3	HI CRUISE	0	0.000	593.6
					COLD STAB	0.21	0.5	661.8	2.21	13.4	LOW CRUISE	0	0.000	307.0
					HOT TRANS	0.40	8.0	612.0	2.20	14.2	IDLE	0	0.000	233.2
					75 FTP	0.42	5.6	654.5	2.27	13.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	101.4
					BAG	0.11	0.9	528.7	2.40	16.7	NEUTRAL	15	0.000	45.0
					SHORT CYCLE						THREE MODE			
					BAG	0.23	0.3	554.1	1.23	16.0	50 MPH	9	0.000	542.4
											30 MPH	4	0.009	368.4
					ACID CYCLE						IDLE (D)	1	0.000	179.9
					BAG	0.41	0.0	705.0	1.91	12.6	IDLE (N)	9	0.000	45.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	635		+08			0.000		0	
					COMMENTS : TEST D050 WAS RUN AT WRONG A C LOAD 13.2									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX---$ HC	CO	PPM NO_x
101	77	PLYM	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.96	12.4	619.3	2.21	13.8	HI CRUISE	0	0.019	593.6
					COLD STAB	0.35	2.5	560.9	1.08	15.7	LOW CRUISE	4	0.005	245.6
					HOT TRANS	1.04	7.3	530.2	1.80	16.3	IDLE	4	0.000	62.0
					75 FTP	0.87	5.8	564.5	1.51	15.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	66.0
					BAG	0.15	1.0	439.4	1.40	20.1	NEUTRAL	11	0.009	40.0
					SHORT CYCLE						THREE MODE			
					BAG	0.44	5.0	441.7	0.61	19.7	50 MPH	5	0.040	573.1
											30 MPH	9	0.009	368.4
					ACID CYCLE						IDLE (D)	10	0.015	63.0
					BAG	0.60	4.6	581.5	0.80	15.0	IDLE (N)	8	0.005	40.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+10			0.000		0	
					COMMENTS : CAPS OK									
102	77	PLYM	VOLA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.83	14.0	639.5	1.79	13.4	HI CRUISE	2	0.045	296.8
					COLD STAB	0.25	4.6	564.4	0.99	15.5	LOW CRUISE	5	0.025	583.3
					HOT TRANS	0.71	6.5	546.4	1.44	15.9	IDLE	10	0.005	51.0
					75 FTP	0.50	7.1	575.0	1.27	15.1				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.030	86.0
					BAG	0.10	1.6	474.9	0.86	18.6	NEUTRAL	0	0.045	32.0
					SHORT CYCLE						THREE MODE			
					BAG	0.55	7.8	442.4	0.48	19.4	50 MPH	5	0.045	317.3
											30 MPH	5	0.005	296.8
					ACID CYCLE						IDLE (D)	15	0.030	47.0
					BAG	0.56	8.7	569.6	0.62	15.2	IDLE (N)	15	0.045	36.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	750		+08			0.030		15	
					COMMENTS : CAPS MISSING-IDLE MIXTURE RICH									
103	77	PLYM	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.45	11.1	816.8	1.35	10.6	HI CRUISE	0	0.001	437.4
					COLD STAB	0.11	0.1	768.4	1.21	11.6	LOW CRUISE	0	0.002	1144.1
					HOT TRANS	0.47	1.9	703.7	1.42	12.5	IDLE	0	0.005	145.0
					75 FTP	0.28	2.8	758.7	1.29	11.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	152.5
					BAG	0.05	0.2	561.3	1.26	15.8	NEUTRAL	0	0.000	63.0
					SHORT CYCLE						THREE MODE			
					BAG	0.25	3.1	562.9	1.32	15.6	50 MPH	0	0.001	387.7
											30 MPH	0	0.000	775.4
					ACID CYCLE						IDLE (D)	0	0.003	140.0
					BAG	0.26	1.4	756.8	0.94	11.7	IDLE (N)	0	0.004	62.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	850		+06			0.004		0	
					COMMENTS : CAPS MISSING-TIMING+6									

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
104	77	DODG	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.67	7.7	646.1	2.98	13.4	HI CRUISE	3	0.020	655.0
					COLD STAB	0.26	1.5	627.9	1.10	14.1	LOW CRUISE	2	0.000	215.4
					HOT TRANS	0.49	4.3	562.2	2.21	15.6	IDLE	10	0.030	78.0
					75 FTP	0.41	3.6	613.7	1.79	14.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	10	0.000	80.0
					BAG	0.11	1.1	462.1	1.90	19.1	NEUTRAL	20	0.045	41.0
					SHORT CYCLE						THREE MODE			
					BAG	0.51	8.5	470.8	0.85	18.3	50 MPH	6	0.030	716.4
											30 MPH	5	0.000	358.2
					ACID CYCLE						IDLE (D)	15	0.060	94.0
					BAG	0.58	5.0	637.6	0.97	13.7	IDLE (N)	15	0.040	46.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		750		+19		2.220		100	
					COMMENTS : CAPS OK-TIMING+11-IDLE MIXTURE RICH									
105	77	DODG	STAW	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.51	9.2	887.7	1.14	9.8	HI CRUISE	0	0.000	208.8
					COLD STAB	0.15	0.6	793.0	1.09	11.2	LOW CRUISE	0	0.000	917.5
					HOT TRANS	0.56	2.0	744.4	1.08	11.8	IDLE	0	0.020	77.1
					75 FTP	0.34	2.7	799.2	1.10	11.0				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	102.5
					BAG	0.07	0.1	637.3	0.98	13.9	NEUTRAL	5	0.001	51.4
					SHORT CYCLE						THREE MODE			
					BAG	0.18	3.4	610.9	0.83	14.4	50 MPH	0	0.000	338.0
											30 MPH	0	0.000	606.4
					ACID CYCLE						IDLE (D)	0	0.000	78.6
					BAG	0.34	1.1	850.0	0.83	10.4	IDLE (N)	0	0.000	54.1
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		925		+02		0.000		0	
					COMMENTS : CAPS MISSING-IDLE RICH-HEATED AIR TUBE NOT CONNECTED									
106	77	CHRY	CORD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.59	42.1	749.7	1.47	10.8	HI CRUISE	0	0.000	317.3
					COLD STAB	0.17	6.3	755.2	0.58	11.6	LOW CRUISE	0	0.000	266.1
					HOT TRANS	0.62	11.2	670.2	1.38	12.9	IDLE	0	0.000	49.0
					75 FTP	0.58	15.0	730.9	0.98	11.7				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	20	0.000	81.0
					BAG	0.05	1.0	530.4	1.74	16.7	NEUTRAL	10	0.010	37.0
					SHORT CYCLE						THREE MODE			
					BAG	0.31	11.7	566.0	0.70	15.2	50 MPH	0	0.000	327.5
											30 MPH	0	0.000	174.9
					ACID CYCLE						IDLE (D)	5	0.000	51.0
					BAG	0.56	12.0	777.4	0.40	11.1	IDLE (N)	5	0.005	38.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		750		+10		0.550		50	
					COMMENTS : CAPS MISSING-TIMING+4-IDLE RICH									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

CHRYSLER

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
107	77	CHRY	CORD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.66	17.9	804.6	1.39	10.6	HI CRUISE	0	0.000	556.7
					COLD STAB	0.11	7.0	789.1	0.58	11.1	LOW CRUISE	0	0.000	288.3
					HOT TRANS	0.27	6.0	699.9	1.25	12.5	IDLE	0	0.025	41.0
					75 FTP	0.27	9.0	768.0	0.93	11.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	84.0
					BAG	0.04	0.3	561.5	1.41	15.8	NEUTRAL	0	0.000	42.0
					SHORT CYCLE						THREE MODE			
					BAG	0.16	5.7	602.4	0.49	14.5	50 MPH	0	0.000	467.2
											30 MPH	0	0.000	288.3
					ACID CYCLE						IDLE (D)	0	0.015	41.0
					BAG	0.24	4.0	808.3	0.51	10.9	IDLE (N)	0	0.020	41.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		750		+13			0.020		0

COMMENTS : CAPS MISSING-TIMING+7.IDLE RICH.

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
108	77	FORD	LTD	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.90	13.6	880.8	0.88	9.8	HI CRUISE	0	0.008	296.8
					COLD STAB	0.23	1.3	827.9	0.85	10.7	LOW CRUISE	0	0.000	179.9
					HOT TRANS	0.93	2.6	754.4	1.14	11.7	IDLE	0	0.000	200.2
					75 FTP	0.56	4.2	818.7	0.94	10.7				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	79.0
					BAG	0.08	0.2	597.3	0.91	14.8	NEUTRAL	0	0.000	83.0
					SHORT CYCLE						THREE MODE			
					BAG	0.57	4.3	625.7	0.96	14.0	50 MPH	0	0.000	276.3
											30 MPH	0	0.000	248.4
					ACID CYCLE						IDLE (D)	0	0.000	190.1
					BAG	2.48	42.2	805.2	0.93	10.1	IDLE (N)	250	3.000	40.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		710		+18			5.200		800
					COMMENTS :	CAPS MISSING-IDLE MIXTURE RICH								
109	77	FORD	PINT	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	3.36	26.8	453.8	1.64	17.5	HI CRUISE	50	0.000	1057.1
					COLD STAB	0.50	6.9	489.9	0.99	17.7	LOW CRUISE	53	0.005	172.3
					HOT TRANS	1.02	8.5	411.3	1.73	20.7	IDLE	10	0.000	47.0
					75 FTP	1.23	11.4	461.0	1.32	18.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	20	0.000	64.0
					BAG	0.29	1.6	315.8	2.51	27.8	NEUTRAL	28	0.000	46.0
					SHORT CYCLE						THREE MODE			
					BAG	0.92	3.9	367.8	1.22	23.6	50 MPH	0	0.280	634.5
											30 MPH	3	0.000	757.3
					ACID CYCLE						IDLE (D)	0	0.000	0.0
					BAG	1.55	19.9	527.7	1.10	15.7	IDLE (N)	10	0.000	46.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		820		+02			0.000		19
					COMMENTS :	CAPS MISSING-IDLE MIXTURE RICH-TIMING-A								
110	77	FORD	GRAN	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.13	27.6	683.7	2.26	12.1	HI CRUISE	11	0.000	593.6
					COLD STAB	0.33	2.2	713.8	1.18	12.4	LOW CRUISE	3	0.000	266.1
					HOT TRANS	0.94	11.3	645.0	1.70	13.3	IDLE	2	0.000	185.0
					75 FTP	0.87	9.9	688.9	1.55	12.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	25	0.000	80.0
					BAG	0.24	1.2	525.7	1.89	16.8	NEUTRAL	20	0.000	66.0
					SHORT CYCLE						THREE MODE			
					BAG	0.36	4.9	556.9	1.29	15.7	50 MPH	20	0.000	614.1
											30 MPH	15	0.000	470.8
					ACID CYCLE						IDLE (D)	12	0.000	177.4
					BAG	3.17	45.4	705.3	1.67	11.3	IDLE (N)	2	0.000	58.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		710		+14			0.000		20
					COMMENTS :	CAPS OK-CHOKE LEAN-IDLE CO RICH								

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
111	77	FORD	THND	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.79	21.6	771.7	5.79	11.0	HI CRUISE	0	0.028	1093.2
					COLD STAB	0.26	1.7	718.2	5.34	12.3	LOW CRUISE	0	0.005	1003.0
					HOT TRANS	0.33	4.9	677.3	6.83	12.9	IDLE	0	0.000	327.5
					75 FTP	0.39	6.6	718.1	5.84	12.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	20	0.000	136.9
					BAG	0.11	0.6	592.4	7.45	14.9	NEUTRAL	30	0.000	70.0
					SHORT CYCLE						THREE MODE			
					BAG	0.41	0.6	561.0	6.25	15.8	50 MPH	9	0.009	1249.3
											30 MPH	10	0.000	1197.3
					ACID CYCLE						IDLE (D)	10	0.000	307.0
					BAG	0.33	0.3	738.7	5.80	12.0	IDLE (N)	21	0.045	19.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		650		+12		0.000		0	
					COMMENTS :	CAPS OK-EGR PLUGGED								
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.10	19.3	751.9	1.86	11.3	HI CRUISE	0	0.010	491.2
					COLD STAB	0.27	3.1	701.8	1.94	12.5	LOW CRUISE	0	0.000	378.7
					HOT TRANS	0.50	10.3	663.4	1.82	13.0	IDLE	0	0.000	429.8
					75 FTP	0.71	8.4	701.6	1.89	12.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	35	0.000	89.0
					BAG	0.14	1.4	540.8	1.96	16.3	NEUTRAL	5	0.000	72.0
					SHORT CYCLE						THREE MODE			
					BAG	0.33	0.9	548.2	1.70	16.1	50 MPH	3	0.005	440.1
											30 MPH	5	0.000	399.1
					ACID CYCLE						IDLE (D)	0	0.000	276.3
					BAG	0.42	0.5	719.4	2.58	12.3	IDLE (N)	10	0.020	64.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		640		+12		0.000		5	
					..MMENTS :	EGR UNPLUGGED								
112	77	FORD	THND	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	3.20	23.2	719.6	2.12	11.6	HI CRUISE	0	0.150	521.9
					COLD STAB	1.44	22.8	684.5	1.24	12.2	LOW CRUISE	35	0.010	245.6
					HOT TRANS	2.10	17.5	614.7	1.74	13.7	IDLE	1350	10.000	6.0
					75 FTP	1.98	21.5	672.7	1.56	12.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	60	0.050	83.0
					BAG	0.59	2.8	508.3	1.66	17.2	NEUTRAL	1950	8.900	10.0
					SHORT CYCLE						THREE MODE			
					BAG	3.12	12.2	530.4	1.43	15.9	50 MPH	50	2.500	532.2
											30 MPH	40	0.000	409.4
					ACID CYCLE						IDLE (D)	1600	9.600	6.0
					BAG	8.05	56.5	612.2	1.62	12.2	IDLE (N)	2000	8.100	4.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		550		+10		10.000		1440	
					COMMENTS :	CAPS MISSING-CHOKE LEAN								

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
113	77	MERC	MONA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.87	24.4	658.4	2.49	12.6	HI CRUISE	20	0.010	552.6
					COLD STAB	0.59	6.3	630.3	1.35	13.8	LOW CRUISE	15	0.000	276.3
					HOT TRANS	1.26	11.4	596.4	1.73	14.4	IDLE	10	0.000	266.1
					75 FTP	1.04	11.4	626.8	1.69	13.7				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	47	0.000	101.4
					BAG	0.32	3.6	507.8	1.87	17.3	NEUTRAL	150	0.000	83.0
					SHORT CYCLE						THREE MODE			
					BAG	0.67	3.7	523.5	1.44	16.7	50 MPH	35	0.006	644.8
											30 MPH	50	0.000	491.2
					ACID CYCLE						IDLE (D)	21	0.000	255.9
					BAG	2.92	17.9	622.0	1.72	13.5	IDLE (N)	140	0.000	103.9
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		600		+12			0.000		21

COMMENTS : -CAPS OK-IDLE RICH-CHOKE LEAN

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
114	77	MERC	COUG	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.08	11.8	746.5	2.30	11.6	HI CRUISE	0	0.000	655.0
					COLD STAB	0.29	0.3	700.7	2.50	12.6	LOW CRUISE	0	0.000	337.7
					HOT TRANS	0.58	2.9	656.3	2.55	13.4	IDLE	0	0.000	450.3
					75 FTP	0.53	3.4	698.0	2.47	12.6				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	49	0.000	101.4
					BAG	0.13	0.2	516.6	2.29	17.2	NEUTRAL	15	0.000	109.0
					SHORT CYCLE						THREE MODE			
					BAG	0.27	0.1	549.8	2.02	16.1	50 MPH	0	0.000	603.8
											30 MPH	0	0.000	440.1
					ACID CYCLE						IDLE (D)	0	0.000	358.2
					BAG	0.36	0.0	753.8	2.50	11.8	IDLE (N)	0	0.025	79.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	710		+12			0.000		0	
					COMMENTS :	CAPS OK-CHOKE 3NL-IDLE RICH								
				2	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.12	21.2	768.0	2.05	11.0	HI CRUISE	0	0.000	706.2
					COLD STAB	0.25	0.7	717.2	1.68	12.3	LOW CRUISE	0	0.000	388.9
					HOT TRANS	0.32	5.0	664.0	1.93	13.2	IDLE	0	0.000	228.1
					75 FTP	0.45	6.1	713.1	1.82	12.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	50	0.000	96.0
					BAG	0.13	0.4	529.6	2.08	16.7	NEUTRAL	10	0.000	63.0
					SHORT CYCLE						THREE MODE			
					BAG	0.52	2.6	542.6	1.95	16.2	50 MPH	5	0.000	511.7
											30 MPH	0	0.000	368.4
					ACID CYCLE						IDLE (D)	210	3.500	121.7
					BAG	1.47	12.8	722.3	2.21	11.9	IDLE (N)	230	2.600	48.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			1.800		210	
					COMMENTS :	CHOKE ADJUSTED-IDLE RESET								
				3	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.33	23.6	767.3	6.40	11.0	HI CRUISE	0	0.015	1665.8
					COLD STAB	0.26	0.8	712.6	4.75	12.4	LOW CRUISE	0	0.000	1327.4
					HOT TRANS	0.28	2.5	664.6	6.17	13.3	IDLE	0	0.000	225.6
					75 FTP	0.49	5.9	710.8	5.48	12.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	233.2
					BAG	0.10	0.3	552.9	6.15	16.0	NEUTRAL	10	0.000	62.0
					SHORT CYCLE						THREE MODE			
					BAG	0.61	4.1	555.6	4.72	15.7	50 MPH	9	0.002	1509.6
											30 MPH	8	0.000	1093.2
					ACID CYCLE						IDLE (D)	9	0.000	240.8
					BAG	1.70	15.0	712.0	4.52	12.0	IDLE (N)	210	2.800	52.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			2.000		200	
					COMMENTS :	EGR HOSE DISCONNECTED								

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xo}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	% CO	PPM NO_x
114	77	MERC	COUG	4	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	4.77	102.2	630.4	2.90	11.0	HI CRUISE	200	2.000	777.8
					COLD STAB	2.78	63.9	607.2	1.55	12.4	LOW CRUISE	40	0.400	286.6
					HOT TRANS	2.76	58.5	562.7	2.24	13.4	IDLE	210	2.700	736.9
					75 FTP	3.18	70.3	599.8	2.01	12.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	75	0.800	58.0
					BAG	1.64	36.7	470.3	2.14	16.6	NEUTRAL	235	3.000	52.0
					SHORT CYCLE						THREE MODE			
					BAG	1.67	22.6	503.1	1.54	16.3	50 MPH	99	1.900	798.3
											30 MPH	0	0.200	152.1
					ACID CYCLE						IDLE (D)	200	3.100	149.5
					BAG	2.85	35.5	671.6	2.23	12.1	IDLE (N)	290	2.200	53.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		650		+12			2.800		200
					COMMENTS : AIR PUMP DEACTIVATED									
				5	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.99	16.5	777.6	2.55	11.0	HI CRUISE	1	0.000	634.5
					COLD STAB	0.29	2.0	714.8	1.63	12.3	LOW CRUISE	0	0.000	307.0
					HOT TRANS	0.58	4.9	659.0	2.00	13.3	IDLE	0	0.000	85.0
					75 FTP	0.51	5.8	712.5	1.92	12.3				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	65	0.000	85.0
					BAG	0.14	0.7	533.5	2.07	16.6	NEUTRAL	10	0.000	56.0
					SHORT CYCLE						THREE MODE			
					BAG	0.48	3.1	549.4	1.66	16.0	50 MPH	10	0.000	532.2
											30 MPH	5	0.000	388.9
					ACID CYCLE						IDLE (D)	0	0.000	90.0
					BAG	1.76	17.1	716.8	2.24	11.8	IDLE (N)	5	0.000	46.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		650		+12			0.000		0
					COMMENTS : CHOKE RICHENED 3 NOTCHES									
				6	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.70	31.5	758.0	2.82	10.9	HI CRUISE	0	0.003	736.9
					COLD STAB	0.28	3.1	708.5	2.09	12.4	LOW CRUISE	0	0.000	337.7
					HOT TRANS	0.57	5.3	645.8	2.39	13.5	IDLE	0	0.000	248.4
					75 FTP	0.65	9.5	701.6	2.32	12.4				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	85	0.000	174.9
					BAG	0.14	0.6	522.1	2.36	17.0	NEUTRAL	20	0.000	119.1
					SHORT CYCLE						THREE MODE			
					BAG	0.94	2.8	536.5	2.32	16.3	50 MPH	5	0.000	726.6
											30 MPH	5	0.000	552.6
					ACID CYCLE						IDLE (D)	5	0.000	307.0
					BAG	2.45	16.5	699.5	2.54	12.1	IDLE (N)	10	0.000	75.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		650		+17			0.000		0
					COMMENTS : TIMING SET +5 FROM SPEC									

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

FORD

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
114	77	MERC	COUG	7	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.32	39.7	773.8	1.96	10.5	HI CRUISE	0	0.000	0.0
					COLD STAB	0.74	45.7	740.8	0.89	10.9	LOW CRUISE	0	0.000	0.0
					HOT TRANS	1.38	25.0	663.0	1.43	12.6	IDLE	0	0.000	0.0
					75 FTP	1.24	38.8	726.4	1.25	11.2				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	0.0
					BAG	0.00	0.0	0.0	0.00	****	NEUTRAL	0	0.000	0.0
					SHORT CYCLE						THREE MODE			
					BAG	0.00	0.0	0.0	0.00	****	50 MPH	0	0.000	0.0
											30 MPH	0	0.000	0.0
					ACID CYCLE						IDLE (D)	0	0.000	0.0
					BAG	0.00	0.0	0.0	0.00	****	IDLE (N)	0	0.000	0.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	650		+12			0.000		0	
					COMMENTS :	RICH BEST IDLE								

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
115	77	BUIC	REGA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	0.91	20.8	717.8	1.87	11.8	HI CRUISE	0	0.000	450.3
					COLD STAB	0.10	0.3	697.6	1.79	12.7	LOW CRUISE	0	0.000	327.5
					HOT TRANS	0.45	8.1	632.1	1.93	13.7	IDLE	0	0.000	141.9
					75 FTP	0.36	6.6	683.9	1.85	12.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	81.0
					BAG	0.06	1.9	502.4	2.26	17.6	NEUTRAL	1	0.000	29.0
					SHORT CYCLE						THREE MODE			
					BAG	0.11	0.6	536.2	1.54	16.5	50 MPH	0	0.000	521.9
											30 MPH	0	0.000	378.7
					ACID CYCLE						IDLE (D)	0	0.000	126.7
					BAG	0.18	0.0	701.3	1.74	12.6	IDLE (N)	0	0.000	38.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		600		+08			0.000		0
					COMMENTS :			1,CAPS OK						
116	77	CADI	DEVI	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.75	43.5	794.7	1.91	10.2	HI CRUISE	0	0.000	440.1
					COLD STAB	1.75	36.8	658.1	1.11	12.3	LOW CRUISE	0	0.002	327.5
					HOT TRANS	1.10	16.5	688.3	1.37	12.4	IDLE	250	4.500	28.0
					75 FTP	1.78	32.7	694.5	1.35	11.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	116.6
					BAG	0.21	2.1	578.1	1.41	15.3	NEUTRAL	275	2.600	24.0
					SHORT CYCLE						THREE MODE			
					BAG	1.48	12.2	526.4	0.96	16.1	50 MPH	0	0.000	348.0
											30 MPH	9	0.000	348.0
					ACID CYCLE						IDLE (D)	280	4.300	30.0
					BAG	2.11	18.0	699.7	1.21	12.1	IDLE (N)	390	4.000	19.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		560		+18			4.600		400
					COMMENTS :			1,CAPS BROKEN-VAC BREAK IN CHOKE SYSTEM-CHOKE INDEX RICH						
117	77	CHEV	CAPR	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.05	17.2	677.0	3.25	12.5	HI CRUISE	2	0.000	757.3
					COLD STAB	0.15	0.0	648.3	3.13	13.7	LOW CRUISE	0	0.000	542.4
					HOT TRANS	0.36	3.7	582.0	3.30	15.1	IDLE	0	0.000	337.7
					75 FTP	0.39	4.6	636.1	3.20	13.8				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	2	0.000	101.4
					BAG	0.08	0.4	466.7	3.41	19.0	NEUTRAL	5	0.000	62.0
					SHORT CYCLE						THREE MODE			
					BAG	0.15	0.1	500.7	2.66	17.7	50 MPH	10	0.000	624.3
											30 MPH	1	0.000	491.2
					ACID CYCLE						IDLE (D)	0	0.000	317.3
					BAG	0.28	0.0	690.0	2.98	12.8	IDLE (N)	0	0.000	56.0
					ENG STATUS		IRPM		TIMING			ICO		IHC
					MEASURED		635		+13			0.150		250
					COMMENTS :			1,CAPS OK-TIMING+5						

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEX HC	$ CO	PPM NO_x
118	77	CHEV	NOVA	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.00	13.0	661.2	2.87	13.0	HI CRUISE	0	0.000	614.1
					COLD STAB	0.17	0.0	646.2	1.98	13.7	LOW CRUISE	2	0.000	286.6
					HOT TRANS	0.41	3.2	583.3	2.54	15.0	IDLE	0	0.000	101.4
					75 FTP	0.41	3.6	632.1	2.32	13.9				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.07	0.1	481.2	2.85	18.4	2250 RPM	0	0.000	116.6
											NEUTRAL	0	0.000	46.0
					SHORT CYCLE						THREE MODE			
					BAG	0.40	0.3	507.8	1.59	17.4	50 MPH	1	0.000	614.1
											30 MPH	0	0.000	307.0
					ACID CYCLE						IDLE (D)	0	0.000	116.6
					BAG	0.29	0.0	634.8	1.47	14.0	IDLE (N)	0	0.000	46.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	605		+13			0.000		0	
					COMMENTS :	1,CAPS MISSING-TIMING+5-IDLE RICH								
119	77	CHEV	CHEL	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.57	16.6	681.5	3.01	12.5	HI CRUISE	0	0.000	921.1
					COLD STAB	0.18	0.0	655.2	2.70	13.5	LOW CRUISE	0	0.000	542.4
					HOT TRANS	0.56	6.6	588.5	3.02	14.8	IDLE	0	0.000	296.8
					75 FTP	0.57	5.2	642.4	2.85	13.6				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.09	0.9	473.0	3.21	18.7	2250 RPM	0	0.000	94.0
											NEUTRAL	99	0.000	45.0
					SHORT CYCLE						THREE MODE			
					BAG	0.41	0.0	502.8	2.09	17.6	50 MPH	9	0.000	593.6
											30 MPH	12	0.000	409.4
					ACID CYCLE						IDLE (D)	9	0.000	212.9
					BAG	0.59	0.0	850.6	2.39	10.4	IDLE (N)	49	0.000	55.0
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	600		+12			0.000		0	
					COMMENTS :	1,CAPS MISSING-VAC BREAK IN CHOKE SYSTEM-TIMING+4								
120	77	OLDS	CUTL	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	1.14	14.3	711.7	1.68	12.0	HI CRUISE	0	0.460	225.2
					COLD STAB	0.12	1.9	762.7	1.00	11.6	LOW CRUISE	0	0.000	184.2
					HOT TRANS	0.55	4.3	654.6	1.41	13.4	IDLE	76	1.400	71.0
					75 FTP	0.45	5.1	722.7	1.25	12.1				
					HIGHWAY FUEL ECONOMY						TWO SPEED IDLE			
					BAG	0.13	5.5	480.5	0.97	18.1	2250 RPM	0	0.000	136.9
											NEUTRAL	0	0.000	16.0
					SHORT CYCLE						THREE MODE			
					BAG	0.13	2.3	580.6	0.70	15.2	50 MPH	0	0.000	614.1
											30 MPH	0	0.000	266.1
					ACID CYCLE						IDLE (D)	20	0.250	25.3
					BAG	0.13	0.6	804.4	1.02	11.0	IDLE (N)	0	0.000	55.8
					ENG STATUS	IRPM		TIMING			ICO		IHC	
					MEASURED	620		+18			0.700		40	
					COMMENTS :	1,CAPS OK-WRONG DISTRIBUTOR								

APPENDIX G CONT'D

LISTING OF EMISSIONS TEST RESULTS

DENVER

GENERAL MOTORS

'B' VEHICLES

VEH NO.	YR	MAKE	MODL	SEQ	TEST TYPE	GRAMS PER MILE HC	CO	CO_2	NO_{xc}	MPG FUEL ECON	TEST TYPE	PPM/HEI HC	% CO	PPM NO_x
121	77	PONT	GRNP	1	FEDERAL TEST PROCEDURE						KEYMODE			
					COLD TRANS	2.36	29.1	638.6	1.39	12.8	HI CRUISE	0	0.000	900.6
					COLD STAB	0.26	6.5	665.3	0.71	13.1	LOW CRUISE	0	0.000	388.9
					HOT TRANS	0.73	7.3	574.1	1.37	15.1	IDLE	0	0.000	126.7
					75 FTP	0.82	11.4	634.9	1.03	13.5				
											TWO SPEED IDLE			
					HIGHWAY FUEL ECONOMY						2250 RPM	0	0.000	147.0
					BAG	0.10	2.3	433.8	1.06	20.3	NEUTRAL	1	0.000	60.0
					SHORT CYCLE						THREE MODE			
					BAG	0.09	1.2	518.0	0.74	17.1	50 MPH	0	0.000	757.3
											30 MPH	0	0.000	307.0
					ACID CYCLE						IDLE (D)	2	0.000	141.9
					BAG	0.24	3.2	703.6	0.81	12.5	IDLE (N)	0	0.000	69.0
					ENG STATUS		IRPM		TIMING		ICO		IHC	
					MEASURED		625		+17		0.000		0	
					COMMENTS :			1.CAPS OK-VAC BREAK IN CHOKE SYSTEM-TIMING-3						

APPENDIX H - LISTING OF DRIVEABILITY EVALUATION

Legend

VEH - Vehicle number

MAKE - Vehicle make

MODL - Vehicle model

SN - Test sequence number

CONSTANT SPEED

NOS - Number of stalls or pass outs upon part throttle acceleration to road speed

A - Acceleration quality (E: excellent; G: good; F: fair; P: poor; U: fail)

C - Cruise quality (E: excellent; G: good; F: fair; P: poor; U: fail)

P - Slight acceleration response, passing (E: excellent; G: good; F: fair; P: poor; U: fail)

AO - Idle quality at stop with air conditioner on (E: excellent; G: good; F: fair; P: poor; U: fail)

AF - Idle quality at stop with air conditioner off (E: excellent; G: good; F: fair; P: poor; U: fail)

ACCELERATION

1/4 - Quality of acceleration under 1/4 throttle (E: excellent; G: good; F: fair; P: poor; U: fail)

1/2 - Quality of acceleration under 1/2 throttle (E: excellent; G: good; F: fair; P: poor; U: fail)

2/3 - Quality of acceleration under 2/3 throttle (E: excellent; G: good; F: fair; P: poor; U: fail)

3/4 - Quality of acceleration under 3/4 throttle (E: excellent; G: good; F: fair; P: poor; U: fail)

RE-START

CT - Cranking time to start after ten minutes in seconds

RIQ - Idle quality after re-start (E: excellent; G: good; F: fair; P: poor; U: fail)

COLD START

CT - Initial cranking time in seconds

DAS - Number of engine die-outs after start

SGS - Number of engine stalls after gear selection

HA - Hesitation, lag upon slight acceleration (1: yes; 2: no)

IQ - Idle quality (E: excellent; G: good; F: fair; P: poor; U: fail)

DRIVE AWAY

SP - Number of stalls or pass-outs upon slight acceleration to road speed

A1 - Acceleration quality (E: excellent; G: good; F: fair; P: poor; U: fail)

I1 - Idle quality after 0.2 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

SP - Number of stalls or pass-outs upon slight acceleration to road speed after 0.2 mile @ stop

A2 - Acceleration quality after 0.2 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

I2 - Idle quality after 0.4 mile @ stop (E: excellent; G: good; F: fair; P: poor; U: fail)

The codes for idle, acceleration and cruise quality are defined as follows:

Excellent - No trace of undesirable elements (smooth, even, responsive)

Good - Slight trace, small indication of an undesirable element (initial uneveness, roughness, hesitation, quickly overcome)

Fair - Undesirable element exists yet reliability is retained (only intermittent misfire, surging, hesitation)

Poor - Undesirable element exists which affects reliability or driver confidence (steady misfire, roughness, lack of power, response)

Fail - Extremely unreliable, possible unsafe conditions exist (frequent stalling, die-outs on acceleration, lack of throttle response)

APPENDIX H

LISTING OF DRIVEABILITY EVALUATION

DENVER

CHRYSLER

'A' VEHICLES

VEH	MAKE	MODL	SN	CONSTANT NOS	A	C	P	SPEED AO	AF	ACCELERATION ¼	½	⅔	¾	RE-START CT	RIQ	COLD START CT	DAS	SGS	HA	IQ	DRIVE AWAY SP	A1	I1	SP	A2	I2
001	PLYM	STAW	1	0	G	G	G		G	G	G	G	G	4	G	2	0	0	2	G	0	G	G	0	G	G
001	PLYM	STAW	2	0	G	E	E		G	F	F	G	G	2	E	1	0	0	2	G	0	G	G	0	G	G
002	PLYM	VOLA	1	0	F	G	G		G	G	G	F	F	6	G	1	0	0	2	G	0	G	G	0	F	G
002	PLYM	VOLA	2	0	G	G	G		G	G	G	G	G	7	F	1	0	0	2	G	0	G	G	0	P	G
003	PLYM	STAW	1	0	G	G	G	G	G	G	G	G	G	2	G	1	0	0	2	E	0	G	E	0	G	E
003	PLYM	STAW	2	2	G	G	G	G	G	G	G	G	G	4	G	1	0	0	1	G	3	F	G	3	P	F
004	DODG	STAW	1	0	G	E	E	E	E	G	G	G	G	2	E	1	0	0	1	G	1	G	G	1	G	G
004	DODG	STAW	2	0	G	E	G	G	G	G	G	G	G	2	G	1	0	0	2	G	1	G	G	0	G	G
005	DODG	STAW	1	2	F	G	E		F	P	F	G	P	2	E	2	0	0	1	F	0	F	F	0	F	F
005	DODG	STAW	2	0	F	P	P		G	F	F	F	F	2	G	2	0	0	2	G	0	F	G	0	F	G
006	DODG	CHAR	1	0	E	E	E	G	E	E	E	E	E	2	E	1	0	0	1	F	1	F	F	0	G	G
006	DODG	CHAR	2	0	G	G	G	F	G	G	G	G	G	2	G	1	0	0	2	F	0	F	F	0	G	G
006	DODG	CHAR	3	0	F	G	G	G	F	G	G	G	G	2	G	1	0	0	2	F	0	G	G	0	G	G
007	CHRY	CORD	1	0	E	E	E	E	E	E	E	E	E	1	E	2	0	0	2	G	0	G	G	0	G	G
007	CHRY	CORD	2	0	F	F	G	G	G	G	G	G	G	6	G	2	0	0	2	G	0	F	F	0	F	F

'B' VEHICLES

VEH	MAKE	MODL	SN	CONSTANT NOS	A	C	P	SPEED AO	AF	ACCELERATION ¼	½	⅔	¾	RE-START CT	RIQ	COLD START CT	DAS	SGS	HA	IQ	DRIVE AWAY SP	A1	I1	SP	A2	I2
101	PLYM	STAW	1	0	G	G	G		G	G	G	F	F	2	G	5	3	0	2	G	0	G	G	0	G	E
102	PLYM	VOLA	1	0	G	G	G	G	G	G	G	G	G	2	G	1	0	0	2	G	0	G	G	0	G	G
103	PLYM	STAW	1	0	F	E	E	E	E	P	G	G	G	1	E	3	0	0	2	G	0	G	G	0	G	G
104	DODG	STAW	1	0	G	G	G	G	G	G	F	F	F	2	G	1	0	0	2	G	0	G	G	0	F	G
105	DODG	STAW	1	0	F	G	F	F	F	F	F	F	F	1	F	2	0	0	1	F	0	P	F	0	P	G
106	CHRY	CORD	1	0	P	F	G	P	F	P	P	P	P	1	F	2	0	0	2	G	0	F	G	0	G	G
107	CHRY	CORD	1	1	F	F	E	F	G	P	F	G	G	2	G	4	0	0	2	G	0	G	G	0	G	G

APPENDIX H CONT'D

LISTING OF DRIVEABILITY EVALUATION

DENVER

FORD

'A' VEHICLES

			CONSTANT SPEED					ACCELERATION				RE-START		COLD START					DRIVE AWAY					
VEH	MAKE	MODL	SN	NOS	A	C	P	AO	AF	1/4	1/2	2/3	3/4	CT	RIQ	CT	DAS	SGS	HA	IQ	SP	A1	I1	SP	A2	I2
008	FORD	LTD	1	0	E	E	E	G	E	E	E	E	E	2	E	10	0	0	1	F	0	F	G	0	G	G
008	FORD	LTD	2	0	E	E	E	G	E	E	E	E	E	4	G	1	0	0	2	F	0	F	F	0	G	G
008	FORD	LTD	3	0	E	E	E	G	E	E	E	E	E	2	G	1	0	0	2	F	0	G	G	0	G	G
009	FORD	PINT	1	0	E	E	E		E	E	E	E	E	2	E	1	0	0	2	F	0	P	F	0	F	G
010	FORD	GRAN	1	0	G	G	F	G	G	G	G	G	G	2	G	1	0	0	2	F	0	F	G	0	G	G
010	FORD	GRAN	2	0	G	G	F	F	F	G	G	G	G	2	F	1	0	0	2	F	0	F	G	0	G	G
011	FORD	LTD	1	0	E	E	E	G	E	G	E	E	E	2	E	1	0	0	2	F	0	F	G	0	G	G
011	FORD	LTD	2	0	G	G	G	F	G	G	G	G	E	1	G	1	0	0	2	F	0	F	G	0	G	G
011	FORD	LTD	3	0	G	G	F	F	G	G	G	G	G	2	G	1	0	0	2	F	0	F	G	0	G	G
012	FORD	THND	1	0	G	G	G	G	G	G	G	F	F	2	G	1	0	0	2	G	1	F	F	0	F	G
012	FORD	THND	2	0	G	E	E	G	G	G	G	E	E	2	F	1	0	0	2	G	0	G	G	0	G	G
013	MERC	MONA	1	0	G	G	G	G	G	G	G	G	G	3	G	1	0	0	2	G	0	G	G	0	G	G
013	MERC	MONA	2	0	G	E	G	F	F	G	G	G	G	1	F	1	0	0	2	G	1	G	G	0	G	G
014	MERC	COUG	1	0	E	E	E	E	E	E	E	E	E	2	E	1	0	0	2	F	1	F	F	0	G	G
014	MERC	COUG	2	0	E	E	E	G	E	E	E	E	E	2	E	1	0	0	2	G	0	G	G	0	G	G

'B' VEHICLES

			CONSTANT SPEED					ACCELERATION				RE-START		COLD START					DRIVE AWAY					
VEH	MAKE	MODL	SN	NOS	A	C	P	AO	AF	1/4	1/2	2/3	3/4	CT	RIQ	CT	DAS	SGS	HA	IQ	SP	A1	I1	SP	A2	I2
108	FORD	LTD	1	0	E	E	E	G	G	E	E	E	E	6	E	1	0	0	2	F	0	G	G	0	G	G
109	FORD	PINT	1	0	G	G	F	G	G	G	G	G	G	3	G	1	0	0	2	F	1	F	G	0	G	G
110	FORD	GRAN	1	0	E	E	E		E	E	E	E	E	3	E	1	0	0	2	F	0	F	G	0	G	G
111	FORD	THND	1	0	E	E	E	E	E	E	E	E	E	2	E	1	0	0	2	E	0	E	E	0	E	E
111	FORD	THND	2	0	G	F	G	E	E	G	G	G	G	1	G	2	0	2	2	F	0	E	G	0	E	G
112	FORD	THND	1	0	E	E	E	G	E	E	E	E	E	2	E	1	0	0	2	F	1	F	G	0	G	G
113	MERC	MONA	1	0	E	E	E	G	G	E	E	E	E	2	F	1	0	0	2	G	0	G	G	0	G	G
114	MERC	COUG	1	0	G	G	F	G	G	G	G	G	G	3	G	1	0	0	2	G	0	G	G	0	G	G
114	MERC	COUG	2	0	G	F	G	G	G	G	G	G	G	1	G	1	0	0	2	E	0	E	E	0	E	E
114	MERC	COUG	3	0	E	E	E	E	E	E	E	E	E	2	E	1	0	0	2	E	0	E	E	0	E	E
114	MERC	COUG	4	0	G	G	G	G	G	G	G	G	G	1	G	1	0	0	2	E	0	E	E	0	E	E
114	MERC	COUG	5	0	G	G	E	G	G	G	G	G	G	1	G	2	0	0	2	G	0	E	G	0	G	G
114	MERC	COUG	G	0	G	G	E	G	G	G	G	G	G	1	G	2	0	0	2	G	0	E	G	0	E	G
114	MERC	COUG	7	0	G	G	G	G	G	G	G	G	G	1	G	2	1	0	2	P	0	E	G	0	E	G

APPENDIX H CONT'D

LISTING OF DRIVEABILITY EVALUATION

DENVER

GENERAL MOTORS

'A' VEHICLES

		CONSTANT SPEED					ACCELERATION				RE-START		COLD START					DRIVE AWAY					
VEH	MAKE MODL SN	NOS	A	C	P	AO	AF	1/4	1/2	2/3	3/4	CT	RIQ	CT	DAS	SGS	HA	IQ	SP	A1	I1	SP	A2	I2
015	BUIC REGA 1	0	E	E	E	E	E	E	E	E	E	3	E	1	0	0	1	G	0	G	G	0	G	G
015	BUIC REGA 2	0	E	E	E	E	E	E	E	E	E	2	E	1	0	0	2	G	0	G	G	0	G	E
016	CADI ELDO 1	0	F	G	F	E	E	F	F	F	G	2	E	1	0	0	2	F	0	G	E	0	E	E
016	CADI ELDO 2	0	G	G	E	E	E	E	E	E	E	2	E	2	0	0	2	F	0	G	G	0	E	G
017	CHEV CAPR 1	0	E	E	E	F	F	E	E	E	E	2	F	1	0	0	2	G	0	E	F	0	E	F
017	CHEV CAPR 3	0	G	G	G	F	G	G	G	G	G	2	G	1	0	0	2	G	0	G	G	0	G	G
018	CHEV NOVA 1	0	E	E	E	E	E	E	E	E	E	1	E	1	0	0	2	G	0	G	G	0	G	G
018	CHEV NOVA 6	0	E	E	E	E	E	E	E	E	E	1	E	1	0	0	2	G	0	G	G	0	G	G
019	CHEV MALI 1	0	E	E	G	G	E	E	E	E	E	2	E	2	0	0	2	E	0	E	E	0	E	E
020	OLDS CUTL 1	0	G	G	E	G	F	G	G	G	G	2	G	1	0	0	1	F	0	F	G	0	G	G
021	PONT VENT 1	0	E	E	E	E	E	E	E	E	E	3	E	1	0	0	2	G	0	G	G	0	G	G
021	PONT VENT 6	0	E	E	E	E	E	E	E	E	E	3	E	1	0	0	2	G	0	G	G	0	G	G

'B' VEHICLES

		CONSTANT SPEED					ACCELERATION				RE-START		COLD START					DRIVE AWAY					
VEH	MAKE MODL SN	NOS	A	C	P	AO	AF	1/4	1/2	2/3	3/4	CT	RIQ	CT	DAS	SGS	HA	IQ	SP	A1	I1	SP	A2	I2
115	BUIC REGA 1	0	P	G	G	G	F	P	P	P	P	3	F	1	0	0	2	F	0	G	G	0	G	G
116	CADI DEVI 1	0	E	E	E	E	E	E	E	E	E	2	E	1	0	0	2	E	0	E	E	0	E	E
117	CHEV CAPR 1	0	E	G	E	G	E	F	G	E	E	1	E	1	0	0	2	E	0	G	G	0	G	G
118	CHEV NOVA 1	0	G	G	G	G	F	G	G	G	G	1	F	1	0	0	1	F	0	F	F	0	F	G
119	CHEV CHEL 1	0	E	E	E	E	E	E	E	E	E	4	E	1	2	0	2	G	0	E	G	0	E	E
120	OLDS CUTL 1	0	E	E	E	G	E	E	E	G	G	2	E	1	0	0	1	F	0	P	F	0	F	G
121	PONT GRNP 1	0	F	F	G	G	G	F	F	F	F	4	G	1	1	0	1	G	0	F	G	0	G	G

APPENDIX I

Restorative Maintenance Data Forms

Restorative Maintenance Evaluation

Driveability Evaluation form

Test Site _____ Veh.No._____

Make _____ Model _____

Eng,Trans,Carb._____

	Yes	No	Number	Quality Code
A. Constant Speed Phase				
1. Stalls, pass-outs * upon part throttle acceleration to road speed	1	2(13)	☐ (14)	
2. Acceleration Quality				☐ (15)
3. Cruise Quality				☐ (16)
4. Slight acceleration response (passing)				☐ (17)
5. Idle quality at stop - w/air "on" (enter "9" if not equipped)				☐ (18)
w/air "off"				☐ (19)
B. Acceleration from stop phase				
6. Quality of acceleration under ¼throttle				☐ (20)
7. Quality of acceleration under ½ throttle				☐ (21)
8. Quality of acceleration under 2/3 throttle				☐ (22)
9. Quality of acceleration under 3/4 throttle				☐ (23)
C. Re-start Phase				
10. Cranking time to start after 10 min.			sec. ☐☐ (24-25)	
11. Idle quality after re-start				☐ (26)
D. Cold start & idle phase (Dynamometer)				
12. Initial cranking time			sec. ☐☐ (27-28)	
13. Engine die-outs*after start	1	2 (29)	☐ (30)	
14. Engine stalls after gear selection	1	2 (31)	☐ (32)	
15. Hesitation, lag upon slight acceleration	1	2 (33)		
16. Idle quality				☐ (34)
E. Drive-away Phase (Dynamometer)				
17. Stalls, pass-outs upon slight acceleration to road speed	1	2 (35)	☐ (36)	
18. Acceleration quality				☐ (37)
19. Idle quality after 0.2 mile @ stop				☐ (38)
20. Stalls, pass-outs upon slight acceleration to road speed	1	2 (39)	☐ (40)	
21. Acceleration quality				☐ (41)
22. Idle quality after 0.4 mile @ stop				☐ (42)

This driveability evaluation performed prior to which test in sequence ? ☐ (43)

* pass-outs defined as restart from " off idle" stall

die-outs defined as restart from stall at idle

Codes for idle, acceleration & cruise quality

Enter			
	5.	Excellent	- No trace of undesireable elements (smooth, even, responsive,)
	4.	Good	- Slight trace, small indication of an undesireable element(initial uneveness, roughness, hesitation, quickly overcome)
	3.	Fair	- Undesireable element exists yet reliability is maintained. (only intermittent misfire, surging hesitation)
	2.	Poor	- Undesireable element exists which effects reliability or driver confidence. (steady misfire, roughness, lack of power, response).
	1.	Fail	- Extremely unreliable, possible unsafe conditions exist. (frequent stalling, die-outs on acceleration, lack of throttle response).

Test Site_____ Veh. No._____

Restorative Maintenance Evaluation Project

Make_____ Model_____

Maladjustment and Disablement Inspection Form

Eng.,Trans.,Carb._____

VIN_____

Emission Sticker No._____ Eng. Family_____

Vehicle build date_____ Axle ratio_____

Eng. Cal. (Ford)_____ Tire size_____

Item	Measured Value and Comments	Pass	Fail	N/A		Action*	
.Induction System		1	2		(12)	☐	(14)
Intact and complete? Heated air intake system operative? Vacuum lines disconnected,plugged or rerouted?							
.Carburetor and Fuel System	MVT Indicated?_____						
Intact and complete? - Choke system modified,misadjusted? Limiter caps missing or broken? Filler neck altered?	Carb No._____ Fuel Lead Content=_____ gm/gal	1	2		(15)	☐	(16)
.Ignition System	Dist. No._____	1	2		(17)	☐	(18)
Intact and complete?							
Initial timing (measured)	_____° at_____RPM						
Initial timing (spec)	_____° at_____RPM						
Mech. Adv. at int. speed (meas.)	_____° at_____RPM						
Mech. Adv. at int. speed (spec.)	_____° at_____RPM						
Vacuum Advance Begins (meas.)	_____in Hg						
Vacuum Advance Begins (spec.)	_____in Hg						
Vacuum Advance Max. (meas.)	_____° at_____ in Hg						
Vacuum Advance Max. (spec.)	_____° at_____ in Hg						
. E.G.R. System	EGR Valve No._____	1	2	3	(19)	☐	(20)
Intact and complete? Vacuum lines disconnected,plugged or rerouted? Idle speed drop with ext. vacuum applied?							
. Air Pump System		1	2	3	(21)	☐	(22)
. P.C.V. System		1	2		(23)	☐	(24)
. Exhaust System		1	2		(25)	☐	(26)
. Evaporative Control System		1	2		(27)	☐	(28)
. Internal Engine and Misc. Components_____		1	2	3	(29)	☐	(30)
Man Hours required for inspection			☐.☐		(31-33)		
Man Hours required for action					☐.☐		(34-36)

*Action Code

0 = No Action

1 = Adjust or reconnect (no parts damaged, altered or missing)

2 = Repair (item present but damaged or altered slightly)

3 = Replace (item missing or severely damaged-replacement necessary) Record part numbers and retail prices of replaced items.

2/25/77

Restorative Maintenance Evaluation
Emission Component Function Check
General Motors Corporation

Test Site_____Veh. No._____
Make_____Model_____
Eng. Trans. Carb._____

	Item	Specification*	Comments/Specified & Meas. Values	Pass	Fail	N/A	Action**	
1.	P.C.V.	Check operation using AC PCV tester		1	2	3 (13)	☐	(14)
2.	Heated Air Inlet	Check vacuum actuator diaphragm and temperature sensor		1	2	3 (15)	☐	(16)
3.	E.F.E.	Check vacuum to close		1	2	3 (17)	☐	(18)
4.	E.F.E. TVV	Check closing temperature		1	2	3 (19)	☐	(20)
5.	E.F.E. Check Valve	Check for leakage		1	2	3 (21)	☐	(22)
6.	E.G.R. Valve	Check RPM drop with vacuum applied		1	2	3 (23)	☐	(24)
7.	E.G.R. TCV	Check opening temperature		1	2	3 (25)	☐	(26)
8.	E.G.R. Snap Disc Control Valve	Check opening temperature		1	2	3 (27)	☐	(28)
9.	E.G.R. Backpressure Transducer	Check vacuum between EGR and EPT		1	2	3 (29)	☐	(30)
10.	E.G.R. TVV	Check opening temperature		1	2	3 (31)	☐	(32)
11.	Air Injection Reactor	Check operation		1	2	3 (33)	☐	(34)
12.	Full Vacuum Advance System	Check operation		1	2	3 (35)	☐	(36)
13.	Ported Vacuum Advance System	Check operation		1	2	3 (37)	☐	(38)
14.	Distributor Advance Diaphragm	Check for leakage		1	2	3 (39)	☐	(40)
15.	Vacuum Spark Delay Valve (or restrictor)	Check delay time		1	2	3 (41)	☐	(42)
16.	Vacuum Advance TVV	Check opening temperature		1	2	3 (43)	☐	(44)
17.	Vacuum Advance TVS	Check opening temperature		1	2	3 (45)	☐	(46)
18.	Vacuum Advance Modulator Valve	Check operation		1	2	3 (47)	☐	(48)
19.	Idle Stop Solenoid	Check for response to battery voltage		1	2	3 (49)	☐	(50)
20.	Vacuum Break (primary)	Check for leakage		1	2	3 (51)	☐	(52)
21.	Vacuum Break (secondary)	Check for leakage		1	2	3 (53)	☐	(54)
22.	Electric Choke	Check operation		1	2	3 (55)	☐	(56)
23.	Spark Plugs, Wires, etc.	Check with scope		1	2	3 (57)	☐	(58)
24.	Other_____	_____		1	2	3 (59)	☐	(60)
25.	Man-Hours for Inspection						☐.☐	(61-63)
26.	Man-Hours for Action						☐.☐	(64-66)

* The specifications and procedures for performing these functional checks will vary among vehicle makes and models. Consult the applicable shop manual for precise directions and record specified and measured values where appropriate.

1976 Buick Chassis Service Manual; 1975.
1976 Cadillac Shop Manual; 1975.
1976 Cadillac Seville Shop Manual; 1975.
1976 Chevrolet Chevette Shop Manual; 1976.
1976 Oldsmobile Chassis Service Manual; 1976.
1976 Pontiac Supplement Service Manual; Sept. 1975.

** Action Codes:

0 - no action
1 - adjust
2 - repair
3 - replaced(record part numbers and retail prices of replace items

8/5/77

Restorative Maintenance Evaluation
Idle CO and RPM Inspection & Adjustment

Test Site_____ Veh. No._____
Make_____Model_____
Eng., Trans. Carb._____

GENERAL MOTORS CORPORATION - "LEAN DROP IDLE" METHOD

Although this adjustment method applies to all General Motors vehicles, the test conditions and specifications must be determined for each individual vehicle. Appropriate service manuals and other manufacturer publications are to be consulted.

Record findings, adjustments and results in the spaces below:

Idle quality before adjustment*		[ ]	(13)
Measured idle speed		[ ][ ][ ][ ]	(14-17)
Number of 1/4 turns required to lightly seat each idle mixture screw. (1-bbl. carb. fill in "L" space only.)	R	[ ][ ]	(18-19)
	L	[ ][ ]	(20-21)
Specified "before lean drop idle" speed		[ ][ ][ ][ ]	(22-25)
Specified final idle speed		[ ][ ][ ][ ]	(26-29)
Number of 1/4 turns of each screw to achieve this drop		[ ][ ]	(30-31)
Average number of 1/4 turns of each screw from the lightly seated position once the specified final idle speed is achieved.	R	[ ][ ]	(32-33)
	L	[ ][ ]	(34-35)
Final Idle Quality**		[ ]	(36)
Man-hours required for adjustment***		[ ].[ ]	(37-39)

*Before adjustment

Enter 3 - Excellent (smooth, even idle)
2 - Fair (only intermittent roughness)
1 - Poor (steady misfire)

**Final idle quality

Enter 5 - much better
4 - slightly better
3 - no noticeable difference
2 - slightly worse
1 - much worse

***Adjustment time

Normally, the flat rate time of .5 man-hours will be used although the actual time is to be recorded in unusual cases.

The procedure for this adjustment is found in the appropriate manufacturer's shop manual.

The specifications are found on the test vehicle's emission sticker. 8/15/77

Restorative Maintenance Evaluation

Emission Control Function Check Pg. 1 of 2

Ford Motor Company

TEST SITE_____VEH. NO._____
MAKE _____MODEL_____
ENG. CARB. TRANS._____

Item	Manual Reference*	Specifications	Comments/Meas.Value	Pass	Fail	N/A	Action Code
1. Exhaust Heat Control Valve	29-28	Close @ 15"vac.-2" leak-down 1 minute max.		1	2	3	(13) ☐ (14)
2. P.C.V. System	29-31	"Rattle" of valve, suction @ crankcase inlet		1	2		(15) ☐ (16)
3. E.G.R. Valve	29-34	Initial stem movement ±1" from spec. Max.1"Leak-down from 8" in 30 sec. Stem movement & RPM drop w/8" applied to valve	_____"start _____"spec. _____RPM Drop	1	2	3	(17) ☐ (18)
4. E.G.R. P.V.S.	29-34	Vac. indicated only above P.V.S. Temp.		1	2	3	(19) ☐ (20)
5. High Speed Modulator	29-34	Application of 10"Vac. to cause E.G.R. valve stem movement		1	2	3	(21) ☐ (22)
6. Venturi Vacuum Amplifier	29-34	Vac.gauge to indicate ±.3" variation from specified bias value	_____Bias Value _____Tested	1	2	3	(23) ☐ (24)
7. Vacuum Reservoir Vacuum Reservoir Check Valve	29-35	Max. 1" Leak-down from 15" in 1 min.		1	2	3	(25) ☐ (26)
8. Thermactor Air Pump	29-32	Air Pressure exiting outlet @ 1,500 RPM		1	2	3	(27) ☐ (28)
9. By-pass valve	29-32 & 40	Air flow diminish w/pinch-off or disconnect.		1	2	3	(29) ☐ (30)
10. Thermactor Check-valves	29-32	No exhaust gas leakage @ valve		1	2	3	(31) ☐ (32)
11. Vacuum Diff. Control	29-41	Diminished air flow upon Decel. from 2,500 RPM		1	2	3	(33) ☐ (34)
12. Electric P.V.S.	29-41	Vacuum signal to By-pass valve @ normal oper. Temp.		1	2	3	(35) ☐ (36)
13. Solenoid Vacuum Valve	29-41	Hose removal from By-pass to cause "Dump" w/eng. at Norm. oper. Temp. Type 1, normally open No Dump upon grounding Type 2, normally closed, Dump when grounded		1	2	3	(37) ☐ (38)
14. Floor Pan Thermal Switch	29-42	Continuity Between "B+" & Ground		1	2	3	(39) ☐ (40)
15. Fuel Deceleration Valve Diaphragm	29-33	Max. 5" leak-down from 15" in 5 sec.		1	2	3	(41) ☐ (42)
16. Fuel Deceleration Valve Time rate	29-33	Time for vac. to drop to "0" after throttle release to meet spec's	_____Spec. _____Tested	1	2	3	(43) ☐ (44)
17. Fuel Decel Transmission Interlock	29-42	No Vac.@ idle in "N" std.Trans.-vac. in "high",3rd or 4th auto. trans.-vac. in "Reverse"		1	2	3	(45) ☐ (46)
18. P.V.S. Fuel Decel Interlock	29-33	Vac. to be present once P.V.S. Temp. is reached.		1	2	3	(47) ☐ (48)
19. Speed Modulated Decel	Volume # 2 29-02-65	No vacuum under 11 mph. solenoid action when energized. speed sensor continuity 40 ohms	_____ mph _____ohms	1	2	3	(49) ☐ (50)
20. Spark Delay Valves	29-48	Mono & Dual Delays to reach 8" in spec. time. per color code		1	2	3	(51) ☐ (52)

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Restorative Maintenance Evaluation

Emission Control Function Check Pg.2 of 2

Ford Motor Company

Item	Manual Reference*	Specifications	Comments/Meas.Value	Pass	Fail	N/A	Action Code
21. Spark Control System Distributor P.V.S.	29-71	vacuum @ dist. to be 2" or less. at idle & normal temp.	_____"@ idle	1	2	3 (53) ☐	(54)
22. Cold Start P.V.S.	29-71	VAC. signal to occur once P.V.S. temp. is reached.		1	2	3 (55) ☐	(56)
23. Vacuum check valve	29-71	max. 1" leak-down from 5" in 30 sec.	_____"	1	2	3 (57) ☐	(58)
24. Spark retard delay valve	29-71	time to reach 8" must meet spec.	_____spec. _____test	1	2	3 (59) ☐	(60)
25. Distributor diaphragm	29-73	max 1" leak-down from 10" in 1 minute		1	2	3 (61) ☐	(62)
26. Throttle positioning solenoid		to extend w/bat. volt. applied		1	2	3 (63) ☐	(64)
27. Electric choke	29-53	power to connector w/eng. running. Resistance from choke term. to ground to meet spec.	_____ohms spec. _____ohms test	1	2	3 (65) ☐	(66)
28. Choke pull-off diaphragm	29-56	no vacuum leakdown		1	2	3 (67) ☐	(68)
29. Air cleaner vacuum motor	29-57	door to remain closed for 60 sec. w/16" vacuum trapped		1	2	3 (69) ☐	(70)
30. Air cleaner temperature control , duct valve.	29-57	closed below 105°F open @ 130-150°F		1	2	3 (71) ☐	(72)
31. Cold weather modulator	29-58	not to hold vacuum above 75°F		1	2	3 (73) ☐	(74)
32. Cold temp. actuated vacuum system	29-58	using test lamp, no light below 40°F. above 70°, lamp to light.		1	2	3 (75) ☐	(76)
33. Air cleaner delay valve	29-58	time to reach 8" vacuum from 0" to meet specifications.	_____spec. _____tested	1	2	3 (77) ☐	(78)
34. Spark plugs & wires		firing voltages & other scope pattern faults.		1	2	3 (79) ☐	(80)
35. Exhaust Backpressure Transducer				1	2	3 (13) ☐	(14)
36. Other _____				1	2	3 (15) ☐	(16)
37. Man hours required for inspection				☐.☐ (17-19)			
38. Man hours required for action						☐.☐ (20-22)	

REMARKS ON TESTED ITEMS:

RECORD ALL PART NUMBERS & RETAIL PRICES OF ALL THE REPLACED ITEMS BELOW.

* Refer to 1975-1976 Car Shop Manual; Volume V: Pre-delivery, Maintenance and Lubrication; First Printing: Sept. 1975.

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Test site _____ Veh. No. _____
Make _____ Model _____
Eng. trans. carb. _____

Restorative Maintenance Evaluation

Idle CO and RPM Inspection & Adjustment

Ford Motor Company Propane enrichment idle fuel mixture check.

Engine is to be at normal operating temperature. Evaporative emission and crankcase ventilation hoses are to be disconnected from the air cleaner. Crankcase ventilation hose in the air cleaner is to be plugged. Set curb idle speed to specifications. Engine is to be run at 1,500 rpm for 1 minute before each speed check.

I. Idle quality before adjustment* _____ ☐

Measured idle speed ☐☐☐☐ RPM

Idle RPM specification ☐☐☐☐ RPM

Is idle RPM adjustment required at this time?

If "YES", adjusted to _____ ☐☐☐☐ RPM

If "NO", leave blank & proceed

II. Allowable range of idle speed increase with propane enrichment. ☐☐☐ to ☐☐☐ RPM

Measured idle speed increase with propane enrichment. ☐☐☐ RPM

Is idle CO adjustment required at this time?

If "NO", skip to final idle quality

If "YES", proceed through the following steps

III. Final Idle Speed _____ ☐☐☐☐ RPM

Specified "reset" range for idle speed increase ☐☐☐ to ☐☐☐ RPM

Final idle speed increase ☐☐☐ RPM

Number of 1/4 turns of mixture screw required to achieve this increase _____ ☐☐

Was this adjustment within the range allowed with the limiter caps intact? YES 1 / NO 2 ☐ / Missing or not functional 3

Final idle quality** _____ ☐

CODE FOR IDLE QUALITY

*Before adjustment
Enter 3 - Excellent, smooth, even idle
2 - Fair, only intermittent roughness
1 - Poor, steady misfire, roughness

**Final idle quality
Enter 5 - much better
4 - slightly better
3 - no noticeable difference
2 - slightly worse
1 - much worse

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Restorative Maintenance Evaluation

Emission Component Function Check

Chrysler Corporation

Test Site _____ Vehicle No. _____

Make _____ Model _____

Eng, Trans, Carb. _____

	Item	Manual Reference*	Specification	As Measured/Comments	Pass	Fail	N/A	Action Code***	
1.	P.C.V. System	0-16	"Rattle" of Valve, Vacuum at valve and breather inlet		1	2	3 (13)	☐	(14)
2.	Evaporative Control System	0-15	Proper hose routing & filter check		1	2	3 (15)	☐	(16)
3.	Heated air inlet diaphragm	25-15	Max. of 5" leak-down from 20"	_____"	1	2	3 (17)	☐	(18)
4.	Heated air inlet door	25-15	Below 50°F. closed to fresh air Above 80°F. closed to heated air		1	2	3 (19)	☐	(20)
5.	Electrically assisted choke switch	25-12	At normal operating temperature, Single-stage continuity for 5 sec. to 5 min. Dual-stage, check light intensity	_____sec.	1	2	3 (21)	☐	(22)
6.	Electrically assisted Choke heater	25-14	4-12 ohms	_____ohms	1	2	3 (23)	☐	(24)
7.	C.C.I.E. switch	25-7	To be open 75°F. or below Max. of 1" leak-down in 15 sec. at normal temp.	_____"	1	2	3 (25)	☐	(26)
8.	C.C.E.G.R Switch	25-27	Blue switch, open @ 75°F; Yellow switch, open @ 125°F. Max. 1" leakdown in 1 min.		1	2	3 (27)	☐	(28)
9.	Idle Enrichment Delay Solenoid	25-7	Energized for 30-40 sec.	_____sec.	1	2	3 (29)	☐	(30)
10.	Idle Enrichment Diaphraghm	25-7	RPM change w/vacuum applied		1	2	3 (31)	☐	(32)
11.	O.S.A.C. valve	25-18	20 sec. to gradual stabilize	_____sec.	1	2	3 (33)	☐	(34)
12.	E.G.R. valve	25-27	Stem movement with vacuum applied		1	2	3 (35)	☐	(36)
13.	E.G.R. Time Delay Solenoid	25-27	Energized for 30-40 sec.	_____sec.	1	2	3 (37)	☐	(38)
14.	Vacuum Control Amplifier	25-29	At idle temp. above C.C.E.G.R. Bias signal (2"-3") present at E.G.R. - Activating vacuum w/throttle action.	_____rpm.	1	2	3 (39)	☐	(40)
15.	T.I.C. Valve	25-15	No vacuum advance allowed below 225°F		1	2	3 (41)	☐	(42)
16.	Air pump/Aspirator		See appropriate manual		1	2	3 (43)	☐	(44)
17.	Throttle Stop Solenoid		Extension with application of battery voltage		1	2	3 (45)	☐	(46)
18.	Catalyst Protect System Speed switch **		Extension @ 2,000 RPM Retract @ 1,800 RPM	_____rpm. _____rpm.	1	2	3 (47)	☐	(48)
19.	Dashpot	14-32	Consistant return to idle		1	2	3 (49)	☐	(50)
20	Choke kickdown diaphragm	14-29	check for leakage- 1/16" in 10 seconds allowed		1	2	3(51)	☐	(52)
21	Spark plug & cables, cap & rotor		Check firing voltages, other scope action. Note faults.		1	2	3(53)	☐	(54)
22	Vacuum advance unit		No leak-down from 15" in 20 sec.		1	2	3(55)	☐	(56)
23	Other _____				1	2	3(57)	☐	(58)
24	Other _____				1	2	3(59)	☐	(60)
25	Man hours required for inspection				☐.☐ (61-63)				
26	Man hours required for action							☐.☐	(64-66)

* Complete procedures for tests are detailed in 1976 Chry. - Dodge-Ply.-Chassis Body Service Manual ; 2nd Edition.

** This procedure described on page 35, "Emission Control Service Training"

*** 0 - No action, 1 - adjust, 2 - repair, 3 - replace (record part numbers and retail prices of replaced parts)

8/5/77

RESTORATIVE MAINTENANCE EVALUATION
IDLE CO AND RPM INSPECTION AND ADJUSTMENT

Test Site_____Veh. No_____
Make_____Model_____
Eng., Trans., Carb_____

Chrysler Corporation - Propane Enrichment Method

This technique is to be used only on 1977 model year vehicles certified for sale in 49 states. Precise procedures are found in the 1977 Chrysler - Dodge - Plymouth Chassis - Body Service Manual; section 25, Pages 9-10

Idle quality before adjustment* ☐ (13)

Curb idle RPM (measured) ☐☐☐☐ (14-17)

Curb idle RPM (specification) ☐☐☐☐ (18-21)

Is curb idle RPM adjustment required at this time? 1-yes 2-no ☐ (22)

See emission sticker for tolerances. In either case, adjust idle speed screw to specified curb idle speed before proceeding.

Enriched idle Speed (measured) ☐☐☐☐ (23-26)

Enriched idle Speed (specification) ☐☐☐☐ (27-30)

Is idle mixture adjustment required at this time? 1-yes 2-no ☐ (31)

If measured speed is ± 25 RPM, of the specified speed, no idle mixture adjustment is required. Proceed directly to evaluation of final idle quality. If difference is greater, adjust idle mixture according to the procedures in the Shop Manual.

Number of 1/4 turns of each mixture screw required to achieve smooth idle at the specified curb idle speed. In the case of one barrel carburetors, fill in "L" spaces only.

☐☐ R (32-33)
☐☐ L (34-35)

Was this adjustment within the range allowed by the limiter cap(s)? 1-yes 2-no ☐ (36)

3-cap(s) missing or broken

Final idle quality** ☐ (37)

Man-hours required for inspection and adjustments*** ☐.☐ (38-40)

* Before adjustment
Enter 3 - Excellent (smooth, even idle)
2 - Fair (only intermittent roughness)
1 - Poor (steady misfire)

** Final idle quality
Enter 5 - much better
4 - slightly better
3 - no noticeable difference
2 - slightly worse
1 - much worse

*** Inspection and adjustment time
Normally, the flat rate times listed below will be used although actual time is to be recorded in unusual cases.

Inspect and reset IRPM 0.3 man-hours
Complete procedure 0.4 man-hours

The specifications are found on the test vehicle's emission sticker 8/15/77